

# PURDUE UNIVERSITY

**Does**

ENGINEERING

In this Catalog

Superseded Sept. 1, 1949

SCIENCE

See Revised Schedule



PHARMACY

AGRICULTURE

HOME ECONOMICS

EDUCATION

*Off-Campus  
Catalog*

TECHNICAL EXTENSION DIVISION

# CALENDAR

## 1949-1950

September 12 . . . . . Orientation Period for New Students Begins  
September 19, 20, 21 . . . . . Registration for First Semester  
September 22, 7 A.M. . . . . First Semester Classes Begin  
November 23, 12 M. . . . . Thanksgiving Recess Begins  
November 28, 7 A.M. . . . . Thanksgiving Recess Ends  
December 21, 6 P.M. . . . . Christmas Recess Begins  
January 5, 7 A.M. . . . . Christmas Recess Ends  
February 2 . . . . . Orientation Period for New Students Begins  
February 3, 6 P.M. . . . . First Semester Ends  
February 9, 10, 11 . . . . . Registration for Second Semester  
February 13, 7 A.M. . . . . Second Semester Classes Begin  
April 8, 12 M. . . . . Spring Recess Begins  
April 17, 7 A.M. . . . . Spring Recess Ends  
June 16, 6 P.M. . . . . Second Semester Ends  
June 19 . . . . . Orientation Period for New Students Begins  
June 21, 22 . . . . . Registration for Summer Session  
June 23, 7 A.M. . . . . Summer Session Classes Begin  
July 4 . . . . . Independence Day  
August 19, 12 M. . . . . Summer Session Ends

## 1950-1951

September 13 . . . . . Orientation Period for New Students Begins  
September 18, 19, 20 . . . . . Registration for First Semester  
September 21, 7 A.M. . . . . First Semester Classes Begin

Extension activities of Purdue University are operated within the Technical Extension Division. Information regarding the extension offerings of the University may be obtained by writing to the Director, Technical Extension Division, 209 Service and Stores Building, Purdue University, Lafayette, Indiana.

*Serving the Needs of the  
People of the State*

PURDUE UNIVERSITY

offers an

Off-Campus Program

of

College Work

The Catalog

for the

School Year 1949-1950

TECHNICAL EXTENSION DIVISION

**ENGINEERING**

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**SCIENCE**

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**AGRICULTURE**

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**HOME ECONOMICS**

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*The new Purdue-Barker Center in Michigan City, a recent gift to the University. The building contains many important works of art and will be preserved, in part, as a museum. A portion of the entry hall is shown below.*



# PURDUE UNIVERSITY

## *Off-Campus Program*

PURDUE UNIVERSITY, a land-grant institution, extends its programs of study in science, technology, and agriculture through University Centers, which have been established in order to better serve the needs of the people of the State. The Off-Campus University Centers provide an opportunity for students, in many cases, to live at home and take regular University work. In addition, this state-wide program provides many credit and non-credit courses, correspondence instruction, short courses, demonstrations, lectures, conferences, publications, and other formal and informal enterprises for the purpose of making available to the people of the State the educational resources of the University.

**College Credit Courses.** College credit courses carry residence credit (with certain limitations on graduate courses) and are identical in quality and content with courses given on the Lafayette campus. All instructors, full- or part-time, are selected and approved by the heads of the various academic schools and departments. Courses are planned and supervised by the schools and departments in the same manner as on campus. Enrollment in a Center is enrollment in Purdue.

**Non-Credit Courses.** The University will offer non-credit classes, of an adult nature, which are within the scope of its teaching facilities. Any interested group may request a course from those listed in the current catalog, or may request assistance in the development of a course to meet their particular needs. A member of the extension staff will assist with the planning and operation of such a class.

**Freshman Work.** Freshman work acceptable toward a degree in the Schools of Engineering, Science, Pharmacy, Agriculture, Home Economics, and the Trade and Industrial Education Department of the Division of Education and Applied Psychology is offered through the off-campus program. Courses such as shop and military training, which are not offered off-campus, may be postponed until the end of the freshman year. Students may enroll on the Lafayette campus after completion of their first year, or may continue their studies at the Center if the required courses are available. However, students are cautioned to consult their advisors or Center manager concerning the amount of work they profitably can pursue off-campus.

The courses recommended in the freshman programs of studies, which follow (and are so indicated by bold-faced type), constitute a full college load and will require about 23 hours in class each week. After having completed a full freshman year's work, students may transfer to the campus as sophomores.

### Special Services for Industry

The Technical Extension Division will cooperate with individual industries in the development and operation of their industrial training programs. However, such programs may be limited to the extent that facilities and staff are available.

Such service is rendered without charges other than the regular fees assessed for student enrollment in classes.

At the present time cooperative programs of this kind are being offered to employees of Indiana industries. Typical examples of these programs are as follows:

**Inland Steel Company.** Specialized programs are operated to train mechanical, electrical, chemical and metallurgical technicians.

**International Harvester Company.** Technical and cultural courses supplementing the workers' job activities are operated in formal classes.

**The Magnavox Company.** Specialized technical courses are operated to supplement the training of electrical technicians.

**Salisbury Axle Division, Dana Corporation.** A specialized, intensive training program in quality control is being operated for supervisory personnel.

**Joseph E. Seagram and Sons, Inc.** General interest courses with college credit are offered in the plant for groups wishing further educational development.

**Requirements for Admission**

For admission to the freshman class one must present credit in 15 units of secondary-school work.

Of the fifteen units, seven are prescribed for all applicants, namely:

|                           |              |                           |             |
|---------------------------|--------------|---------------------------|-------------|
| English                   | .....3 units | Plane Geometry            | .....1 unit |
| History or Social Science | ....1 unit   | Science (with laboratory) | ....1 unit  |
| Algebra                   | .....1 unit  |                           |             |

Three additional units must be chosen from English, languages other than English, mathematics, science, history, and social science.

For admission to the engineering schools the following subjects must be included:

|                      |               |                |               |
|----------------------|---------------|----------------|---------------|
| Intermediate Algebra | .....1/2 unit | Solid Geometry | .....1/2 unit |
|----------------------|---------------|----------------|---------------|

The remaining five units may be chosen from any other subjects in which credit for graduation has been allowed in the secondary school, or in which entrance examinations have been passed.

An application for admission must be made on the proper form obtainable from any of the University Centers or from the Director of Admissions. The University prefers to receive the application at least two months in advance of registration. Applicants from high schools should apply as soon as possible after the beginning of their last semester in high school.

**Admission with Deficiencies.** No student is admitted with deficiencies unless he ranks in the upper third of his graduating class. He is not admitted to the Schools of Engineering unless he has completed both algebra and plane geometry. If he is deficient in solid geometry, he may make this up by taking a non-credit correspondence course or a non-credit course on or off campus. A deficiency in advanced algebra may be removed by a non-credit correspondence course or by completion of Mathematics 1.

**Orientation and Placement Examinations.** New students are required to take the following orientation tests: psychological, English, physical science, and mathematics. A placement test in drawing may be given for those requesting an evaluation of previous experience. These tests are not entrance examinations.

Where facilities and enrollment in an University Center permit, students may be classified according to their abilities and training. The score on the English placement tests will determine whether a new student is assigned to English A, 1, 27, or 32. The score on the mathematics placement test will determine whether the new student in engineering or in science (major in mathematics, chemistry, or physics only) will be assigned to Mathematics 1 or 31. The score on the engineering drawing test will determine whether the student in engineering will take G.E. 11 or 12. Additional information about placement in English, mathematics, and engineering drawing may be found under the department listing of the courses.

### Grading System

6, Excellent; 5, Good; 4, Fair; 3, Passing; 2, Condition; 1, Failure; 0, Incomplete; W, Withdrawn with satisfactory performance; W1, Withdrawn with unsatisfactory performance.

Only two grades will be given in a non-credit course: S, Satisfactory; U, Unsatisfactory.

**Scholarship Index.** For every student there will be computed, at the end of each semester, a scholarship index by using the following formula:

$$S = \frac{6N_6 + 5N_5 + 4N_4 + 3N_3 + 2N_2 + N_1}{N_6 + N_5 + N_4 + N_3 + N_2 + N_1}$$

where S equals scholarship index;  $N_6$ , total number of semester hours of Grade 6;  $N_5$ , total number of semester hours of Grade 5, etc.

A cumulative index will be also computed by the same formula, where  $N_6$  is the total number of hours of Grade 6, etc. If more than one grade is recorded for the same course, the course is counted the corresponding number of times in computing the index.

**Distinguished Students.** Of the undergraduate students enrolled in curricula leading to degrees, and carrying at least fourteen semester hours of assigned work, those whose scholarship index at the end of any regular semester is equal to or greater than 5.00 are designated as distinguished students of that semester.

**Engineering Students.** Students enrolled in the schools of engineering must have attained a cumulative scholastic index of 3.2 or higher by the end of their second regular semester in Purdue University in order to continue as students in the schools of engineering; also at the end of their fourth regular semester their cumulative index shall be 3.2 or higher.

**Probation.** A student who fails at the end of any semester to make a passing grade in a minimum of 12 hours of work (6 hours, summer session) shall be placed upon probation. If in either of his next two sessions he fails to pass the required minimum of hours, he shall be dropped. (When failure to meet this requirement is due to the temporary grade of 0 (Incomplete) this rule shall not apply.)

The student is removed from probation if he passes 12 semester hours (6 hours, summer) for his next two sessions; or if he passes all his work (a minimum of 14 hours, or 7 hours, summer) with an average grade of 4 for one session.

A fee of \$15.00 per semester will be charged for each semester that the student is on probation.

### Tuition and Fees

**Tuition.** Tuition, fees, and deposits for each course are listed with the course descriptions in this catalog. They are paid to a representative of the University at the time of registration. Veterans may enroll under the G. I. Bill, Public Law 346 or 16. Each veteran should have a letter of entitlement or certificate of authorization with him at registration. If the veteran does not have this authorization, he must prepay tuition and buy books and supplies. This money will be promptly refunded as soon as the proper certificates are presented.

The veteran registering for the first time is advised to consult well in advance of registration with the Purdue officials of the center at which he plans to register.

**Breakage Fees.** Course fees include the cost of normal breakage and wear and tear on equipment. An additional charge will be levied against individuals for excessive waste, loss, or breakage as may occur. Such special charges must be paid before course credit will be given.

**Fees for Special Examinations.** A fee of \$10 is charged persons not regularly enrolled for at least 12 hours of work, for advanced-standing examinations or placement tests. A fee of \$2.00 is charged students who are regularly enrolled for twelve hours or more of work for advanced-standing examinations, removal of condition, or placement tests. There is no fee for placement tests taken at regularly scheduled times. Neither is there a fee for the removal of an incomplete grade.

**Refunds and Withdrawals.** Course fees will be refunded under any one of the following conditions.

1. Withdrawal during first and second week of term, 80 per cent refund.
2. Withdrawal during third and fourth weeks of term, 60 per cent refund.
3. Withdrawal during fifth and sixth weeks of term, 40 per cent refund.
4. Withdrawal after sixth week of term, no refund.

A probation student withdrawing from all courses without grades is eligible for full refund of probation fees paid for the current semester.

Students who register for a course and do not attend class will be withdrawn as of the first day of class and entitled to a refund of eighty per cent of the course fees paid.

Deposits on equipment are subject to regular service and breakage charges.

Refunds are not transferable from one registration period to another or from one student to another.

To be eligible for a refund the student must notify the extension office and apply for a refund at the center where he is registered at the time of his withdrawal.

### Correspondence Study

Training is also given by correspondence study for high-school students and recent high-school graduates lacking certain subjects required for admission to the University or needing to refresh their knowledge of other courses in preparation for university work. Courses currently available are:

**Elementary Algebra I.** This course covers the first semester of high-school algebra.

**Elementary Algebra II.** Continuation of the first semester's work.

**Advanced Algebra.** Begins with a review of the topics studied in a basic course in algebra. In addition, the course includes linear equations, fractional and literal equations, systems of linear equations, radicals, exponents, quadratic equations, and systems of equations involving quadratics.

**Plane Geometry I.** This course covers the amount of geometry usually taught in the first semester.

**Plane Geometry II.** Continuation of the first semester's work.

**Solid Geometry.** Study of lines, planes, angles, prisms, cylinders, pyramids, cones, and spheres, with emphasis upon numerical problems, the drawing of space figures, and the relations of solid geometry to the mathematics given in the engineering courses at Purdue.

**Plane Trigonometry.** This course follows the same general plan as that taken on the campus by freshman engineers. The first part includes the use of trigonometric functions in solving triangles with either the natural values of the functions or by means of logarithms. The second part covers analytical trigonometry, including a study of identities, equation, radian measure, and inverse functions.

**Review of Pre-College Mathematics.** A review of important mathematical skills essential to success in college work; fractions, decimals, percentage, the metric system, the axioms of algebra, simple equations, exponents and radicals, factoring, quadratic equations, ratio, proportion, uses of dimensional equations, and formulas of geometry.

**Introduction to Engineering Drawing.** Includes lettering, the use of instruments, technical sketching, orthographic projection, dimensioning, and tracing. Students satisfactorily completing the course may take an examination to qualify for advanced work at Purdue. Students with previous training in drawing may review their work and become acquainted with University methods of instruction.

**First Aid Toward Better English.** Each term at Purdue many freshmen are required, because of their deficiencies in English, to enroll in a non-credit course in grammar, punctuation, and sentence structure. This correspondence course may be the means of avoiding the non-credit course and possibly of qualifying on the orientation tests for an advanced course in English composition.

**Beginning Spanish.** This course introduces the student to the social background of Spanish and emphasizes grammar and vocabulary.

For information on correspondence study courses write to the address given on the inside front cover.

### Key to Abbreviations in Freshman Programs of Study

Approved plans of study for first- and second-semester freshmen enrolled in the various schools and options are given on the following pages. Courses recommended by the schools and departments are so indicated by **bold-faced type**. The type of course as it applies to the student's plan of study for the program in which he is enrolled is indicated by the following abbreviations:

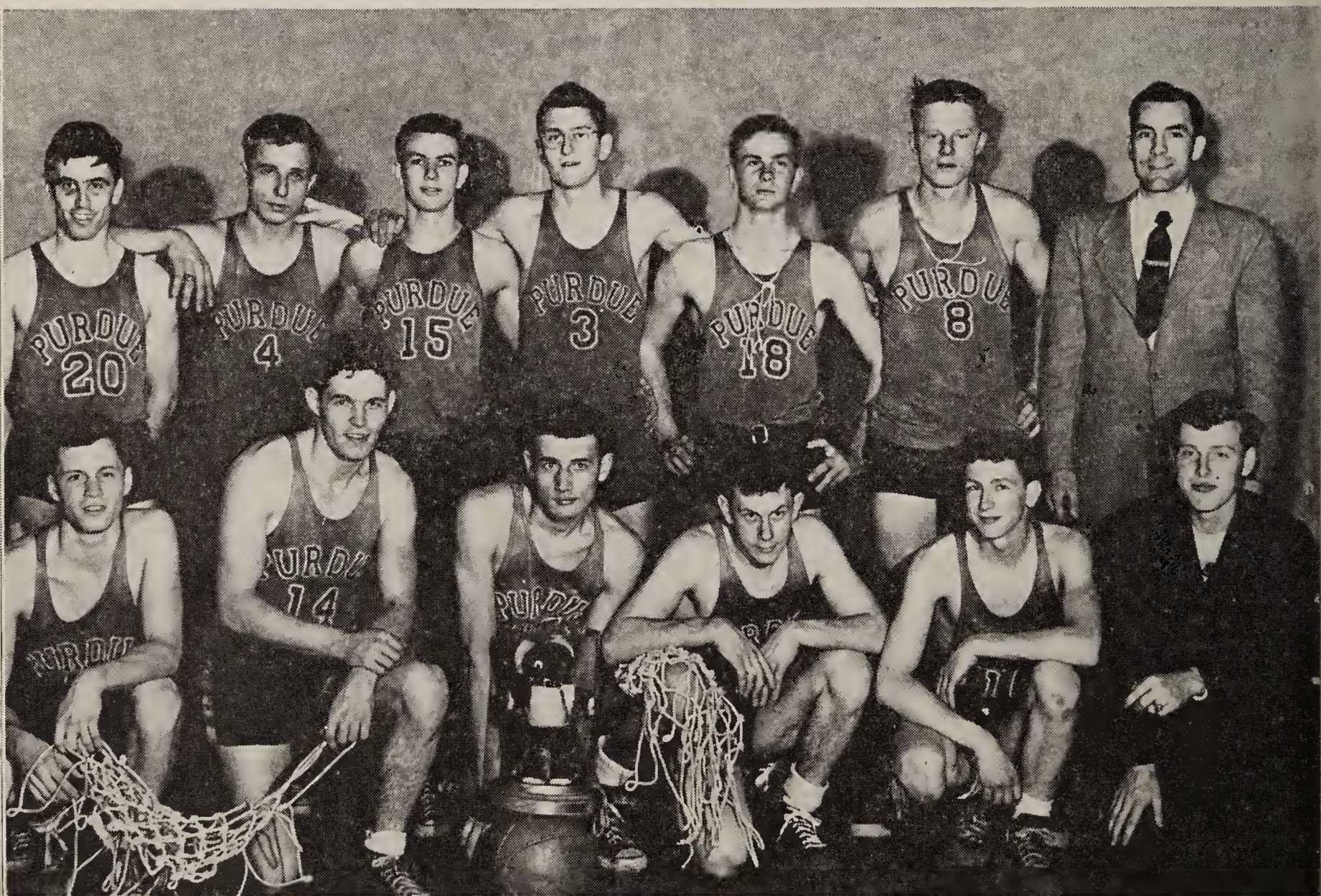
R —Required course

Rs—Required substitute, which replaces a required course listed in the general catalog.

el —Elective

op—Optional may be substituted in place of the required course.

*Recreation is available to "off-campus" students. Below, Fort Wayne "TEDdy" Bear" Champs.*



# Freshman Plans of Study

## Engineering

Undergraduate instruction in the Schools of Aeronautics, Chemical and Metallurgical Engineering, Civil Engineering and Engineering Mechanics, Electrical Engineering, and Mechanical Engineering leads to the degree of Bachelor of Science. In order to give the student sufficient time to adjust himself and to choose the branch of engineering for which he is best adapted, the following program of study during the freshman year is common for the curricula in all engineering schools.

### First Semester

| Course No. | Course Title                   | Credit | Tuition | Type* |
|------------|--------------------------------|--------|---------|-------|
| Math. 1    | Algebra and Trigonometry ..... | 5      | \$40    | R     |
| Engl. 1    | English Composition .....      | 3      | 24      | R     |
| Chem. 1    | General Chemistry .....        | 4      | 43      | R     |
| Hist. 5    | U. S. in World Affairs .....   | 3      | 24      | R,    |
| G. E. 11   | Engineering Drawing .....      | 2      | 28      | R     |
|            |                                | Total  | 17      |       |
| P.E.M. 12† | Physical Activities .....      | 1      | 15      | el    |
| C.E. 6‡    | Plane Surveying .....          | 2      | 25      | R     |
| Spch. 11§  | Public Speaking .....          | 2      | 16      | R,    |

### Second Semester

|            |                               |       |      |    |
|------------|-------------------------------|-------|------|----|
| Math. 2    | Analytic Geometry .....       | 5     | \$40 | R  |
| Engl. 27   | Introduction to Fiction ..... | 3     | 24   | R  |
| Chem. 2    | General Chemistry .....       | 4     | 43   | R  |
| Govt. 30   | Elements of Democracy .....   | 3     | 24   | R  |
| G. E. 12   | Engineering Drawing .....     | 2     | 28   | R  |
|            |                               | Total | 17   |    |
| P.E.M. 12† | Physical Activities .....     | 1     | 15   | el |
| C.E. 6‡    | Plane Surveying .....         | 2     | 25   | R  |
| Spch. 12§  | Public Speaking .....         | 2     | 16   | R, |
| Spch. 14§  | Principles of Speech .....    | 3     | 24   | R  |
| Psy. 1     | Elementary Psychology .....   | 3     | 24   | R, |

\* Key to abbreviations appears on page 6.  
† P.E.M. 12 will be applied as a substitute toward credit in military training.  
‡ Students in Civil Engineering must have credit in C.E. 6 before taking C.E. 10 (Civil Engineering Camp).  
§ Spch. 11-12 may be substituted for the Spch. 14 requirement.

# Science

The School of Science provides both introductory and advanced courses in the various fields of science as well as other subjects essential to a broad education, such as economics, English, government, history, modern languages, and speech. The student may fit himself for practical work in biology, chemistry, mathematics, physics, education, English, speech, history, economics, or modern languages, or for further training in a dental, medical, or law school. The instruction also prepares for teaching. Approved plans of study for the various options follow:

## CHEMISTRY, MATHEMATICS, AND PHYSICS OPTIONS

### First Semester

| Course No. | Course Title                   | Credit | Tuition | Type* |
|------------|--------------------------------|--------|---------|-------|
| Math. 1    | Algebra and Trigonometry ..... | 5      | \$40    | R     |
| Engl. 1    | English Composition .....      | 3      | 24      | R     |
| Chem. 1    | General Chemistry .....        | 4      | 43      | R     |
| Phys. 21†  | General Physics .....          | 5      | 50      | R     |
| or         |                                |        |         |       |
| Biol. 5†   | Biology of Animals .....       | 4      | 43      | R,    |

Total 16 or 17

|           |                                       |   |    |    |
|-----------|---------------------------------------|---|----|----|
| P.E.M. 12 | Physical Activities .....             | 1 | 15 | el |
| P.E.W. 53 | Physical Education .....              | 1 | 10 | R  |
| Spch. 11‡ | Public Speaking .....                 | 2 | 16 | R, |
| Govt. 9   | Introduction to American Government . | 3 | 24 | R  |
| Hist. 5§  | U. S. in World Affairs .....          | 3 | 24 | R, |
| Soc. 1    | Introductory Sociology .....          | 3 | 24 | el |
| A.D. 51   | Survey of the Arts .....              | 3 | 24 | el |
| C.& T. 2  | Clothing the Individual .....         | 3 | 24 | el |
| G.E. 11   | Engineering Drawing ...               | 2 | 28 | el |

### Second Semester

|           |                                  |   |      |    |
|-----------|----------------------------------|---|------|----|
| Math. 2   | Analytic Geometry .....          | 5 | \$40 | R  |
| Engl. 27  | Introduction to Fiction .....    | 3 | 24   | el |
| Chem. 2   | General Chemistry .....          | 4 | 43   | R  |
| Phys. 22† | General Physics .....            | 5 | 50   | R  |
| or        |                                  |   |      |    |
| Biol. 6†  | Introduction to Plant Life ..... | 4 | 43   | R, |

Total 16 or 17

|           |                            |   |    |    |
|-----------|----------------------------|---|----|----|
| P.E.M. 12 | Physical Activities .....  | 1 | 15 | el |
| P.E.W. 54 | Physical Education .....   | 1 | 10 | R  |
| Spch. 12‡ | Public Speaking .....      | 2 | 16 | R, |
| Spch. 14‡ | Principles of Speech ..... | 3 | 24 | R, |



*Laboratory work is fundamental to the study of science. These are students in a biology class.*

|           |                                     |   |    |    |
|-----------|-------------------------------------|---|----|----|
| Govt. 10  | Introduction to American Government | 3 | 24 | R  |
| Govt. 30§ | Elements of Democracy . . . . .     | 3 | 24 | R. |
| F.&N. 1   | Food Selection . . . . .            | 2 | 16 | el |
| Psy. 1    | Elementary Psychology . . . . .     | 3 | 24 | el |
| For. 3    | Conservation . . . . .              | 2 | 16 | el |
| G.E. 12   | Engineering Drawing . . . . .       | 2 | 28 | el |

\* Key to abbreviations appears on page 6.

† Students majoring in mathematics, chemistry, or physics should register for Math. 1 and 2 and Chem. 1 and 2. Students majoring in chemistry or mathematics should postpone physics to a later year and take Biol. 5 and 6 in the first year.

‡ Credit will not be given for both Spch. 11-12 and Spch. 14.

§ Substitute Hist. 5 and Govt. 30 where Govt. 9 and 10 are not offered.

# Science

## BIOLOGICAL SCIENCES, PRE-PHARMACY, AND ALL OTHER OPTIONS

### First Semester

| Course No. | Course Title                          | Credit | Tuition | Type* |
|------------|---------------------------------------|--------|---------|-------|
| Biol. 5    | Biology of Animals .....              | 4      | \$43    | R     |
| Chem. 11   | General Chemistry .....               | 3      | 35      | R     |
| Math. 12   | Algebra .....                         | 3      | 24      | R     |
| Engl. 1    | English Composition .....             | 3      | 24      | R     |
| M.L. 21†   | Beginning French .....                | 3      | 24      | R     |
| or         |                                       |        |         |       |
| M.L. 41†   | First Course in Standard German ..... | 3      | 24      | R     |
|            |                                       | Total  | 16      |       |
| Spch. 11‡  | Public Speaking .....                 | 2      | 16      | R,    |
| P.E.M. 12  | Physical Activities .....             | 1      | 15      | el    |
| P.E.W. 53  | Physical Education .....              | 1      | 10      | R     |
| Govt. 9    | Introduction to American Government.  | 3      | 24      | R     |
| Hist. 5§   | U. S. in World Affairs .....          | 3      | 24      | R,    |
| Soc. 1     | Introductory Sociology .....          | 3      | 24      | el    |

### Second Semester

|           |                                       |       |      |    |
|-----------|---------------------------------------|-------|------|----|
| Biol. 6   | Introduction to Plant Life .....      | 4     | \$43 | R  |
| Chem. 12  | General Chemistry .....               | 3     | 35   | R  |
| Math. 11  | Trigonometry .....                    | 3     | 24   | R  |
| Engl. 27  | Introduction to Fiction .....         | 3     | 24   | el |
| M.L. 22†  | Beginning French .....                | 3     | 24   | R  |
| or        |                                       |       |      |    |
| M.L. 42†  | First Course in Standard German ..... | 3     | 24   | R  |
|           |                                       | Total | 16   |    |
| Spch. 12‡ | Public Speaking .....                 | 2     | 16   | R, |
| Spch. 14‡ | Principles of Speech .....            | 3     | 24   | R, |
| P.E.M. 12 | Physical Activities .....             | 1     | 15   | el |
| P.E.W. 54 | Physical Education .....              | 1     | 10   | R  |
| Govt. 10  | Introduction to American Government.  | 3     | 24   | R  |
| Govt. 30§ | Elements of Democracy .....           | 3     | 24   | R, |

\* Key to abbreviations appears on page 6.

† Those planning to major in one of the biological sciences or to enter medical or dental school should choose M.L. 21 and 22 or M.L. 41 and 42. Substitute approved courses in history and government where modern language is not offered. Students in the Pre-Pharmacy Option may substitute Govt. 9 and 10 or Soc. 1 for modern language.

‡ Credit will not be given for both Spch. 11-12 and Spch. 14.

§ Substitute Hist. 5 and Govt. 30 where Govt. 9 and 10 are not offered.

# Trade and Industrial Education

The four-year curriculum in Trade and Industrial Education which leads to the degree of Bachelor of Science in Trade and Industrial Education is designed to prepare the student to qualify (1) either as an instructor in one of the various subject-matter fields of vocational education, or (2) as a member of a training staff in industry. Completion of this curriculum also fulfills the professional training requirements specified by the Indiana State Teacher Training and Licensing Commission. Individuals with qualified industrial experience may request an evaluation of it for credit purposes.

In order to achieve either one of the objectives, each student is required to complete a basic curriculum which includes the subjects listed below. Provision is then made for majoring in vocational subject-matter fields or in industrial training, and for taking a considerable number of elective subjects.

## First Semester

| Course No. | Course Title                 | Credit | Tuition | Type* |
|------------|------------------------------|--------|---------|-------|
| Math. 12   | Algebra .....                | 3      | \$24    | R     |
| Engl. 1    | English Composition .....    | 3      | 24      | R     |
| G.E. 11    | Engineering Drawing .....    | 2      | 28      | R     |
| Hist. 5§   | U. S. in World Affairs ..... | 3      | 24      | el    |
| Chem. 11   | General Chemistry .....      | 3      | 35      | R     |

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Total 14

|           |                                         |   |    |                |
|-----------|-----------------------------------------|---|----|----------------|
| Spch. 11‡ | Public Speaking .....                   | 2 | 16 | R <sub>s</sub> |
| Govt. 9   | Introduction to American Government ... | 3 | 24 | R              |
| Econ. 1   | Principles of Economics .....           | 3 | 24 | R              |
| Soc. 1    | Introductory Sociology .....            | 3 | 24 | R              |
| Psy. 1    | Elementary Psychology .....             | 3 | 24 | R              |

## Second Semester

|           |                               |   |      |                |
|-----------|-------------------------------|---|------|----------------|
| Math. 11  | Trigonometry .....            | 3 | \$24 | R              |
| Engl. 27  | Introduction to Fiction ..... | 3 | 24   | el             |
| G. E. 12  | Engineering Drawing .....     | 2 | 28   | R              |
| Govt. 30§ | Elements of Democracy .....   | 3 | 24   | R <sub>s</sub> |
| Chem. 12  | General Chemistry .....       | 3 | 35   | R              |

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Total 14

|           |                                         |   |    |                |
|-----------|-----------------------------------------|---|----|----------------|
| Spch. 12‡ | Public Speaking .....                   | 2 | 16 | R <sub>s</sub> |
| Spch. 14‡ | Principles of Speech .....              | 3 | 24 | R              |
| Engl. 31  | Expository Writing .....                | 3 | 24 | R              |
| Econ. 1   | Principles of Economics .....           | 3 | 24 | R              |
| Psy. 2    | Educational Psychology .....            | 3 | 24 | R              |
| Govt. 10  | Introduction to American Government ... | 3 | 24 | R              |

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\* Key to abbreviations appears on page 6.

‡ Credit will not be given for both Spch. 11-12 and Spch. 14.

§ Substitute Hist. 5 and Govt. 30 where Govt. 9 and 10 are not offered.

# Agriculture

The School of Agriculture trains students in many types of agricultural life work, including not only farming, but related educational and industrial activities. Several programs of study are offered in Forestry. Twelve departments in the School of Agriculture offer optional programs preparing students for jobs in research, teaching and extension, as well as various related commercial enterprises. Instructional work is based on fundamental training in biology, chemistry, and physics together with courses in history, economics, English, psychology, and other similar courses.

Agricultural students who may be taking training in basic science courses together with agricultural subjects as a part of the program of training at Purdue University centers should be able to continue their work in residence at Purdue following their freshman year.

## First Semester

| Course No.  | Course Title                         | Credit | Tuition | Type* |
|-------------|--------------------------------------|--------|---------|-------|
| Engl. 1     | English Composition .....            | 3      | \$24    | R     |
| Chem. 11    | General Chemistry .....              | 3      | 35      | R     |
| Biol. 5     | Biology of Animals .....             | 4      | 43      | R     |
| Ag. Econ. 1 | Farm Accounting and Farm Business .. | 3      | 25      | el    |
| P.H. 1      | Poultry Production .....             | 3      | 25      | el    |
| Total       |                                      | 16     |         |       |
| Math. 12    | Algebra .....                        | 3      | 24      | el    |
| Chem. 1     | General Chemistry .....              | 4      | 43      | op    |
| Hist. 5     | U. S. in World Affairs .....         | 3      | 24      | el    |
| P.E.M. 12   | Physical Activities .....            | 1      | 15      | el    |

## Second Semester

|           |                                  |    |      |    |
|-----------|----------------------------------|----|------|----|
| Engl. 27  | Introduction to Fiction .....    | 3  | \$24 | el |
| Chem. 12  | General Chemistry .....          | 3  | 35   | R  |
| Govt. 30  | Elements of Democracy .....      | 3  | 24   | el |
| Biol. 6   | Introduction to Plant Life ..... | 4  | 43   | R  |
| For. 3    | Conservation .....               | 2  | 16   | el |
| Ent. 1    | Introductory Entomology .....    | 3  | 27   | el |
| Total     |                                  | 18 |      |    |
| Spch. 14  | Principles of Speech .....       | 3  | 24   | R  |
| Math. 11  | Trigonometry .....               | 3  | 24   | el |
| Chem. 2   | General Chemistry .....          | 4  | 43   | op |
| Psy. 1    | Elementary Psychology .....      | 3  | 24   | el |
| P.E.M. 12 | Physical Activities .....        | 1  | 15   | el |

\* Key to abbreviations appears on page 6.

## *Home Economics*

The plan of study in Home Economics has two functions: to give the student training which will fit her to become a responsible citizen and an intelligent homemaker and housekeeper; to train her for a skilled occupation by which she may become self-supporting.

Young women trained in home economics have the opportunity to become teachers and supervisors, extension specialists, dietitians, managers of lunch-rooms and tearooms, costume designers, commercial demonstrators, writers, nutrition workers, club leaders, interior decorators, and home demonstrators in extension.

Students interested in vocational home economics teaching; dietetics and nutrition; clothing and textiles; food management; costume designing, interior designing, and commercial designing; home economics in business, or the general course in home economics should enroll in the curriculum listed below. It is not recommended for those interested in the housing option.

### First Semester

| Course No. | Course Title                  | Credit | Tuition | Type* |
|------------|-------------------------------|--------|---------|-------|
| Engl. 1    | English Composition .....     | 3      | \$24    | R     |
| Chem. 11   | General Chemistry .....       | 3      | 35      | R     |
| Biol. 5    | Biology of Animals .....      | 4      | 43      | el    |
| A. D. 51   | Survey of the Arts .....      | 3      | 24      | R     |
| C. & T. 2  | Clothing the Individual ..... | 3      | 24      | R     |
|            |                               | —      |         |       |
|            |                               | Total  | 16      |       |
| Math. 12   | Algebra ..                    | 3      | 24      | el    |
| Hist. 5    | U. S. in World Affairs .....  | 3      | 24      | el    |
| Spch. 11‡  | Public Speaking .....         | 2      | 16      | el    |

### Second Semester

|           |                                  |       |      |    |
|-----------|----------------------------------|-------|------|----|
| Engl. 27  | Introduction to Fiction .....    | 3     | \$24 | op |
| Spch. 14‡ | Principles of Speech .....       | 3     | 24   | el |
| Chem. 12  | General Chemistry .....          | 3     | 35   | R  |
| Govt. 30  | Elements of Democracy .....      | 3     | 24   | el |
| Biol. 6   | Introduction to Plant Life ..... | 4     | 43   | el |
| F. & N. 1 | Food Selection .....             | 2     | 16   | R  |
|           |                                  | —     |      |    |
|           |                                  | Total | 18   |    |
| Math. 11  | Trigonometry .....               | 3     | 24   | el |
| Psy. 1    | Elementary Psychology .....      | 3     | 24   | R  |
| Spch. 12‡ | Public Speaking .....            | 2     | 16   | el |

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\* Key to abbreviations appears on page 6.

‡ Credit will not be given for both Spch. 11-12 and Spch. 14.

## Description of Courses

Courses numbered 1 to 99 are primarily for undergraduate students. Courses numbered 100 to 199 are for undergraduate (usually junior and senior) and graduate students. Courses numbered 200 and above are primarily for graduate students.

### *School of Agriculture*

| Dept. No. | Course Title | Meetings† | Credits | Tuition and Fees |
|-----------|--------------|-----------|---------|------------------|
|-----------|--------------|-----------|---------|------------------|

#### AGRICULTURAL ECONOMICS

|                |                                   |              |         |                                                                                                                                                                                                  |
|----------------|-----------------------------------|--------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ag. Econ. 1    | Farm Accounting and Farm Business | 2+2+5, cr. 3 | \$25.00 | Farm financial records, analysis of farm business; factors affecting farm profits, agricultural geography; types of farming; and current problems in agricultural economics.                     |
| Ag. Econ. 101* | Agricultural Prices               | 3+0+6, cr. 3 | \$24.00 | Analysis of prices of farm products; relation of prices of farm products to other prices, price and production cycles, price forecast, agricultural outlook, adjustment to new price conditions. |

#### AGRONOMY

|           |                 |                       |                    |                                                                                                                                            |
|-----------|-----------------|-----------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Agron. 2  | Crop Production | 2+2+4, cr. 3          | \$25.00            | Fundamental principles in crop production, distribution, rotations, growth, and soil relations; grain and forage crops.                    |
| Agron. 27 | Soil Management | 2+2+5 or 3+0+6, cr. 3 | \$25.00 or \$24.00 | Must be preceded by Chem. 1 or 11, or equivalent.<br>Soil management and fertility. Designed for students taking only one course in soils. |

#### ANIMAL HUSBANDRY

|         |                                          |              |         |                                                                                                                                                                               |
|---------|------------------------------------------|--------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A.H. 4  | Livestock Judging                        | 1+4+4, cr. 3 | \$26.00 | Beef cattle and horses. Scoring of individuals and judging of groups representing the more common classes and grades from the standpoint of the market and the producer.      |
| A. H. 7 | Livestock Judging                        | 1+4+4, cr. 3 | \$26.00 | Swine and sheep. Similar to A.H. 4.                                                                                                                                           |
| A.H. 11 | Types and Market Classes of Meat Animals | 2+4+6, cr. 4 | \$34.00 | Selection of feeder and breeding stock suitable for production of desirable market beef cattle, hogs, and lambs. The marketing, slaughtering, and processing of meat animals. |
| A.H.25  | Animal Nutrition                         | 3+0+6, cr. 3 | \$24.00 | Must be preceded by Chem. 2 or 12, or equivalent.<br>Fundamental principles of animal nutrition.                                                                              |

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† Hours of lecture/recitation+laboratory+preparation per week.

\*May be offered upon request of not less than twenty registered students provided the teaching staff is available.

*There is considerable interest in courses in agriculture at the "off-campus" centers. An instructor from the Lafayette campus teaches a class in agricultural economics.*



- A.H. 108\***      **Genetics**      2+0+4, cr. 2\*, or 3+0+6, cr. 3      \$16.00 or \$24.00  
 Must be preceded by Biol. 2 or 6.  
 Principles of genetics and their relation to the problems of plant and animal breeding.

#### DAIRY HUSBANDRY

- D.H. 1**      **Elements of Dairy Production**      2+2+5, cr. 3      \$25.00  
 Survey of the industry; fundamentals of raising, managing, selecting, and feeding dairy cattle; care of milk and cream on the farm; milk and cream testing; dairy judging.
- D.H.17**      **Elements of Dairy Manufactures**      2+2+5, cr. 3      \$25.00  
 Methods of manufacturing dairy products; buttermilk, skim milk and whey testing; standardization of milk and cream; care and operation of cream separators.

#### ENTOMOLOGY

- Ent. 1**      **Introductory Entomology**      2+2+5, cr. 3      \$27.00  
 The structure, biology, and classification of insects, and the principles of insect control.

#### FORESTRY

- For. 3**      **Conservation**      2+0+4, cr. 2      \$16.00  
 Development and use of natural resources, with special emphasis on renewable natural resources.

#### HORTICULTURE

- Hort. 1**      **Plant Propagation**      2+2+4, cr. 2<sup>2</sup>/<sub>3</sub>      \$25.00  
 Principles, with special reference to greenhouse and ornamental plants.
- Hort. 11**      **Principles of Fruit Growing**      2+2+5, cr. 3      \$25.00  
 Care and management of small home plantings of tree and small fruits; reclamation of old orchards; control of common fruit pests.
- Hort. 12**      **Principles of Vegetable Gardening**      2+2+5, cr. 3      \$25.00  
 A beginning course in the production of vegetables. Designed especially for the home gardener.

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\* Requires special campus approval for two-credit course.

Hort. 29\*

## General Horticulture

2+0+4, cr. 2\*, or 3+0+6, cr. 3      \$16.00 or \$25.00

Of special interest to students who want one 2-credit or one 3-credit course in the various fields of horticulture. Not to be taken by students who have credit in Hort. 11, 12, 27, or 28.

# POULTRY HUSBANDRY

P.H. 1

## Poultry Production

2+2+5, cr. 3      \$25.00

Breeds, breeding, incubation, brooding, feeding, marketing, disease control, and sanitation. Laboratory involving practical skills and tasks with poultry.

*School of Aeronautical Engineering  
and Air Transportation*

A.T. 22

## Air Navigation

2 + 0 + 4, cr. 2      \$16.00

Must be preceded by Math. 1, or equivalent.

The earth and its coordinates; charts and maps; elementary theory and practice of pilotage and dead reckoning; use of navigational instruments and computer.

A.T. 31

# Aeronautical Meteorology

2+0+4, cr. 2      \$16.00

Must be preceded by Math. 1, or equivalent.

### Weather in relation to flight.

### Non-Credit Course

A.T. 08

## Practical Aeronautics

2+0+4, 32 hours, non-credit      \$16.00

One 2-hour lecture-recitation, four hours preparation per week.

A course of practical flying problems. The complete airplane and its operation, including maintenance, starting and stopping the engine, taxiing and flight problems. Practical rules concerning weather problems; government weather services. Air navigation aids and instruments; chart reading and navigation by pilotage and elementary dead-reckoning with applications to actual problems.

School of Chemical and Metallurgical  
Engineering and Geology

# CHEMICAL ENGINEERING

Ch.E. 30

# Chemistry of Engineering Materials

3 + 0 + 6, cr. 3      \$24.00

Must be preceded by Chem. 1, or equivalent.

Available for students of any classification not enrolled in chemical engineering.

Ch.E. 40

# Chemical Engineering Calculations

0+6+0, cr. 2      \$26.00

Must be preceded by Chem. 2, or equivalent, and accompanied or preceded by Math. 3 and Phys. 21.

Ch.E. 41\*

## Unit Operations

2+0+4, cr. 2\*      \$16.00

Must be preceded by Ch.E. 40 and Met.E. 2, or permission of instructor.

A quantitative study of fluid flow, heat transfer, evaporation, etc., with special consideration of problems in design.

\* Requires special campus approval for 2-credit course.



|             |                                               |                                 |         |
|-------------|-----------------------------------------------|---------------------------------|---------|
| Ch.E. 063a  | Elementary Photography                        | 1 + 1 + 2, 16 hours, non-credit | \$ 7.00 |
|             | Selected topics from Ch.E. 063.               |                                 |         |
| Ch. E. 063b | Elementary Photography                        | 1 + 1 + 2, 16 hours, non-credit | \$ 7.00 |
|             | Selected topics from Ch.E. 063.               |                                 |         |
| Ch.E. 063c  | Elementary Photography                        | 1 + 1 + 2, 16 hours, non-credit | \$ 7.00 |
|             | Selected topics from Ch.E. 063.               |                                 |         |
| Ch.E.064    | Photography: Recent Developments              | 1 + 1 + 2, 16 hours, non-credit | \$ 7.00 |
|             | Must be preceded by Ch.E. 063, or equivalent. |                                 |         |

### ENGINEERING AND ECONOMIC GEOLOGY

|         |                                                                                                    |                  |         |
|---------|----------------------------------------------------------------------------------------------------|------------------|---------|
| Geol. 3 | Physical Geology                                                                                   | 3 + 0 + 6, cr. 3 | \$24.00 |
|         | Earth forces, processes, and resulting features.                                                   |                  |         |
| Geol. 4 | Stratigraphic and Structural Geology                                                               | 3 + 0 + 6, cr. 3 | \$24.00 |
|         | Must be preceded by Geol. 3, 44, or equivalent, with a grade of 4 or better.                       |                  |         |
|         | Brief synopsis of historical geology, with emphasis on stratigraphic and structural relationships. |                  |         |

### METALLURGICAL ENGINEERING

|           |                                                                                                     |                  |         |
|-----------|-----------------------------------------------------------------------------------------------------|------------------|---------|
| Met.E. 44 | General Metallurgy                                                                                  | 2 + 0 + 4, cr. 2 | \$16.00 |
|           | Must be preceded by Chem. 2 and 26, or equivalent. Primarily for metallurgical engineers.           |                  |         |
| Met.E. 45 | Elementary Metallurgy                                                                               | 3 + 0 + 6, cr. 3 | \$24.00 |
|           | Must be preceded by Chem. 2 and Phys. 22, or equivalent. Primarily for non-metallurgical engineers. |                  |         |

### Non-Credit Courses

|             |                                                                                                                                                  |                                 |         |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------|
| Met.E. 001  | Steel Making                                                                                                                                     | 2 + 0 + 4, 16 hours, non-credit | \$ 8.00 |
|             | Production methods in steel making.                                                                                                              |                                 |         |
| Met.E. 045  | Elementary Metallurgy                                                                                                                            | 2 + 0 + 4, 16 hours, non-credit | \$ 8.00 |
|             | Must be preceded by Chem. 001, or equivalent. General survey of elementary metallurgy.                                                           |                                 |         |
| Met.E. 045a | Ferrous Metallurgy                                                                                                                               | 2 + 0 + 4, 16 hours, non-credit | \$ 8.00 |
|             | Must be preceded by Met. E. 045, or equivalent. Fundamentals of the reduction, refining, and shaping of ferrous alloys.                          |                                 |         |
| Met.E. 045b | Non-ferrous Metallurgy                                                                                                                           | 2 + 0 + 4, 16 hours, non-credit | \$ 8.00 |
|             | Must be preceded by Met. E. 045, or equivalent. Fundamental principles involved in the reduction and refining of some of the non-ferrous metals. |                                 |         |
| Met.E. 045c | Physical Metallurgy                                                                                                                              | 2 + 0 + 4, 16 hours, non-credit | \$ 8.00 |
|             | Must be preceded by Met. E. 045, or equivalent. Basic principles with emphasis on heat treating.                                                 |                                 |         |

# *School of Civil Engineering and Engineering Mechanics*

## CIVIL ENGINEERING

|         |                                                                                                                                                                                                                                                       |                            |         |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| C.E. 6  | Plane Surveying                                                                                                                                                                                                                                       | 1+3+2, cr. 2               | \$25.00 |
|         | Must be preceded by Math. 11 or equivalent.                                                                                                                                                                                                           |                            |         |
| C.E. 17 | Railroads                                                                                                                                                                                                                                             | 1+3+2, cr. 2               | \$25.00 |
|         | Must be preceded by C.E. 10, Civil Engineering camp.<br>Quantities, cost data, monthly and final estimates; problems in frogs, switches, curves, and transition spirals; maintenance.                                                                 |                            |         |
| C.E. 21 | Stresses                                                                                                                                                                                                                                              | 4+4+8, cr. 5 $\frac{1}{3}$ | \$51.00 |
|         | Must be preceded by Engr. Mech. 21.<br>Analysis of statically determinate structures; reactions, shears, bending moments, and direct stresses due to fixed and moving loads; beams and framed structures.                                             |                            |         |
| C.E. 23 | Fundamentals of Structural Design                                                                                                                                                                                                                     | 2+3+4, cr. 3               | \$30.00 |
|         | Must be preceded by Engr. Mech. 21 and 22.<br>Proportioning and disposition of structural elements in simple structures.                                                                                                                              |                            |         |
| C.E. 41 | Hydraulics                                                                                                                                                                                                                                            | 3+0+6, cr. 3               | \$24.00 |
|         | Must be preceded by Engr. Mech. 21.<br>Pressure on submerged surfaces; flow of fluids; dynamics of flow; models.                                                                                                                                      |                            |         |
| C.E. 61 | Highway Construction                                                                                                                                                                                                                                  | 1+3+2, cr. 2               | \$22.00 |
|         | Must be preceded by C.E. 10, Civil Engineering camp.<br>Location, earthwork, drainage, design, contract procedure, and maintenance.<br>Particular emphasis on low cost roads.                                                                         |                            |         |
| C.E. 62 | Highway Construction                                                                                                                                                                                                                                  | 2+0+4, cr. 2               | \$16.00 |
|         | Must be preceded by Engr. Mech. 22. Materials, design, construction, and maintenance of bituminous, concrete, and block types of roads and streets; subgrade stabilization; administration and finance; and comparative values of road surface types. |                            |         |
| C.E. 71 | Indeterminate Stresses                                                                                                                                                                                                                                | 3+0+6, cr. 3               | \$24.00 |
|         | Must be preceded by C.E. 21 and Engr. Mech. 22.<br>A thorough drill in computing deflections of beams and trusses; indeterminant analysis of moment areas, consistent deflections, slope deflection, and moment distribution.                         |                            |         |

## ENGINEERING MECHANICS

|         |                                                                                                                                                                                                                                                                                                                                                                 |               |         |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|
| E.M. 21 | Statics and Kinetics                                                                                                                                                                                                                                                                                                                                            | 5+0+10, cr. 5 | \$40.00 |
|         | Must be preceded by Phys. 1 or 21 and preceded or accompanied by Math. 4.<br>Statics: forces, vectors, moments, equilibrium, friction, centers of gravity, moments of inertia. Kinetics: force, mass, acceleration, velocity, inertia, work, energy, power, impulse, and momentum.                                                                              |               |         |
| E.M. 22 | Mechanics of Materials                                                                                                                                                                                                                                                                                                                                          | 4+0+8, cr. 4  | \$32.00 |
|         | Must be preceded by E.M. 21 and Math. 4.<br>Stresses and strain: properties of materials; riveted and welded joints; torsion; shear and moment; bending and deflection of beams; statically indeterminate beams; combined stresses; and columns.                                                                                                                |               |         |
| E.M. 31 | Strength of Materials                                                                                                                                                                                                                                                                                                                                           | 3+0+6, cr. 3  | \$24.00 |
|         | Must be preceded by E.M. 22, and C.E. 31 (Testing Materials) or C.E. 35 (Engineering Materials).<br>Strength of materials as such; true stress-strain relations; elastic strength; flow strength; fracture strength; the effects of state of stress, temperature, speed of loading, cycles of loading, duration of load, and previous history of the materials. |               |         |

|         |                                                                                                                                                                                                                                                       |              |         |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| E.M. 32 | Dynamics                                                                                                                                                                                                                                              | 3+0+6, cr. 3 | \$24.00 |
|         | Must be preceded by E.M. 22 or 23.<br>Relative motions acceleration, velocity and displacements for compound motions; impulse, momentum, work and energy for particles, rigid bodies, and elastic bodies; impact; critical speed; gyroscopic effects. |              |         |

## *School of Electrical Engineering*

|           |                                                                                                                                                                                                 |              |         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| E.E. 42e  | Electric Circuit Theory                                                                                                                                                                         | 3+0+6, cr. 3 | \$24.00 |
|           | Must be preceded by E.E. 3a (Alternating Current Circuits I) or equivalent.<br>Basic electric theory, network theorems.                                                                         |              |         |
| E.E. 150e | Advanced Electronics                                                                                                                                                                            | 3+0+6, cr. 3 | \$24.00 |
|           | Electronic theory and tube design.                                                                                                                                                              |              |         |
| E.E. 161  | Illuminating Engineering                                                                                                                                                                        | 3+0+6, cr. 3 | \$24.00 |
|           | Must be preceded by E.E. 3a (Alternating Current Circuits I) or equivalent.<br>Lamp characteristics, illumination measurements and calculations, lighting applications and costs.               |              |         |
| E.E. 174  | Power Transmission and Distribution                                                                                                                                                             | 3+0+6, cr. 3 | \$24.00 |
|           | Must be preceded by E.E. 5a, or 20 (Electrical Engineering-AC) or equivalent.<br>Methods and materials used in design and construction of overhead power lines.                                 |              |         |
| E.E. 183  | Automatic Control Mechanisms                                                                                                                                                                    | 3+0+6, cr. 3 | \$24.00 |
|           | Must be preceded by E.E. 5a (Alternating Current Machines) or 20, and 51 (Electronics II).<br>Fundamental physical and mathematical principles of servo and other automatic control mechanisms. |              |         |
| E.E. 188  | Symmetrical Components                                                                                                                                                                          | 3+0+6, cr. 3 | \$24.00 |
|           | Must be preceded by E.E. 4a (Alternating Current Circuits II).<br>Theory and applications; solutions of unbalanced circuits.                                                                    |              |         |

### Non-Credit Courses

|          |                                                                                                                                                                                                                                                       |                             |         |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------|
| E.E. 03a | Electric and Magnetic Circuit Theory, Part I                                                                                                                                                                                                          | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|          | Must be preceded by a working knowledge of direct- and alternating-current circuit theory.<br>Basic units and laws; alternating current; impedance, inductive and capacitive reactance; resistance; inductance—self and mutual.                       |                             |         |
| E.E. 03b | Electric and Magnetic Circuit Theory, Part II                                                                                                                                                                                                         | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|          | Must be preceded by E.E. 03a, or equivalent.<br>Transformers and reactors; capacitance; polyphase systems; vacuum tubes; schematic diagrams of circuits.                                                                                              |                             |         |
| E.E. 04a | Electric Circuit Analysis, Part I                                                                                                                                                                                                                     | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|          | Continuation of E.E. 03b (Electric and Magnetic Circuit Theory).                                                                                                                                                                                      |                             |         |
| E.E. 04b | Electric Circuit Analysis, Part II                                                                                                                                                                                                                    | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|          | Continuation of E.E. 04a.                                                                                                                                                                                                                             |                             |         |
| E.E. 016 | Wiring Standards and Code Specifications                                                                                                                                                                                                              | 2+0+4, 32 hours, non-credit | \$16.00 |
|          | Must be preceded by a working knowledge of direct- and alternating-current circuit theory.<br>The technical and legal aspects of electrical standards and specifications for indoor, underground, and overhead electrical construction and equipment. |                             |         |

E.E. 017

## Electrical Measurements: Direct Current

2+0+4, 32 hours, non-credit      \$16.00

Must be preceded by a working knowledge of direct- and alternating-current circuits.

D. C. instruments, bridges, potentiometers, and magnetic measurements.

E.E. 018

## Electrical Measurements: Alternating Current

2+0+4, 32 hours, non-credit      \$16.00

Must be preceded by a working knowledge of direct- and alternating-current circuits.

A. C. indicating instruments and bridges, oscillographs, and radio frequency measurements.

E.E. 052

# Industrial Electronic Control

2+0+4, 32 hours, non-credit      \$16.00

High-school graduation, including two years of mathematics and one year of physics, or equivalent.

Fundamental principles of electron-tube operation and practical applications of these electron tubes in basic circuits of industrial control apparatus.

E.E. 061

# Fundamentals of Illumination

2+0+4, 32 hours, non-credit      \$16.00

Must be preceded by a working knowledge of alternating-current circuits.

## General principles of domestic and commercial illumination.

Department of General Engineering

G.E. 11

# Engineering Drawing

1+4+1, cr. 2      \$28.00

Lettering, use of drafting instruments, freehand drafting, orthographic drawing, sectional and auxiliary views, dimensioning, pencil and ink tracing. Problems in engineering drawing subjects.

A student transferring from another college or university may be granted credit for previous engineering drawing.

A student who has had two years of high school drawing or equivalent industrial drafting experience may be given credit for G.E. 11, on the basis of an examination given at the time of the regular orientation examinations.

*Drafting, sometimes called the language of engineering, is a basic course for all engineering students.*



A student may qualify for credit in G.E. 12 by submitting acceptable samples of his drafting work done in industry accompanied by a letter from his employer, indicating the nature and duration of his service.

Credentials for advanced standing must be submitted in advance of registration.

|           |                                                                                                                                                                                                                                                                                                                        |                                |                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------|
| G.E. 12   | <b>Engineering Drawing</b>                                                                                                                                                                                                                                                                                             | 1+4+1, cr. 2                   | \$28.00            |
|           | Continuation of G.E. 11. Developments and intersections, isometric and oblique drawing, fasteners, and assembly and detail working drawings.                                                                                                                                                                           |                                |                    |
| G.E. 16   | <b>Descriptive Geometry</b>                                                                                                                                                                                                                                                                                            | 1+3+2, cr. 2                   | \$23.00            |
|           | Must be preceded by G.E. 12 and Math. 2 (or Math. 11, for non-engineers).<br>Relations of points, lines, and planes, and their graphical and algebraic representations; graphical solutions, and associations with algebraic solutions of theoretical and practical problems.                                          |                                |                    |
| G.E. 21   | <b>Production Illustration</b>                                                                                                                                                                                                                                                                                         | 0+6+0, cr. 2                   | \$28.00            |
|           | Perspective, detail, sectioned, phantom, and exploded assembly drawing; light and shade, dimensioning, and techniques, all as applied to catalog and production illustration.                                                                                                                                          |                                |                    |
| G.E. 89   | <b>Industrial Safety</b>                                                                                                                                                                                                                                                                                               | 3+0+6, cr. 3                   | \$24.00            |
|           | Safety methods in industry. Safety codes, compensations, inspection, safety educational program, industrial facilities to care for injured workmen, health hazards and protective measures, safeguards on equipment and buildings to prevent accidents.                                                                |                                |                    |
| G.E. 91*  | <b>Elements of Accounting I</b>                                                                                                                                                                                                                                                                                        | 2+0+4, cr. 2*, or 3+0+6, cr. 3 | \$16.00 or \$24.00 |
|           | Students must have at least junior standing.<br>Basic principles of accounting for assets, liabilities, and net worth. Financial transactions analyzed in terms of their significance in the preparation and interpretation of financial statements.                                                                   |                                |                    |
| G.E. 92   | <b>Elements of Accounting II</b>                                                                                                                                                                                                                                                                                       | 3+0+6, cr. 3                   | \$24.00            |
|           | Must be preceded by G.E. 91.<br>Continuation of basic accounting principles including special features of accounting for partnerships, corporation capital stock and surplus, funds and reserves, cash and stock dividends, methods of internal check, consignments, and analysis of comparative financial statements. |                                |                    |
| G.E. 98   | <b>Industrial Organization and Management</b>                                                                                                                                                                                                                                                                          | 3+0+6, cr. 3                   | \$24.00            |
|           | Students must have at least junior standing.<br>Principles of organization and management in their applications to product and process planning, plant layout, production control, quality control, motion and time study, industrial relations, marketing and cost analysis.                                          |                                |                    |
| G.E. 107  | <b>Industrial Personnel Administration</b>                                                                                                                                                                                                                                                                             | 3+0+6, cr. 3                   | \$24.00            |
|           | Should be preceded by G.E. 98.<br>Personnel administrative functions for industrial relations. Job analysis, employment procedures, and personnel records.                                                                                                                                                             |                                |                    |
| G.E. 117* | <b>Industrial Relations</b>                                                                                                                                                                                                                                                                                            | 2+0+4, cr. 2*, or 3+0+6, cr. 3 | \$16.00 or \$24.00 |
|           | Must be preceded by G.E. 98. or equivalent.<br>Selection, development, and management of manpower. Wage administration, employment stabilization, and collective bargaining.                                                                                                                                           |                                |                    |
| G.E. 127  | <b>Cost Accounting</b>                                                                                                                                                                                                                                                                                                 | 3+0+6, cr. 3                   | \$24.00            |
|           | Must be preceded by G.E. 91.<br>Accounting for costs of labor and material, expense distribution, standard                                                                                                                                                                                                             |                                |                    |

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\* Requires special campus approval for two-credit course.

costs and flexible budgets, from viewpoint of the industrial supervisor who uses cost reports to control activities for which he is responsible.

- G.E. 128      Motion and Time Study      3+0+6, cr. 3      \$24.00**  
Students must have at least junior standing.  
Techniques of motion and time study and their interrelationships. Basic procedure, possibility guides, process analysis, operation analysis, micromotion analysis, and stop-watch time study, multiple-activity analysis.
- G.E. 129      Advanced Motion and Time Study      3+0+6, cr. 3      \$29.00**  
Must be preceded by G.E. 128.  
Formulation of industrial policies for the application of motion and time study. Practice in construction of standard times and synthetic rates. Micromotion technique applied to industrial problems.
- G.E. 183      Production Planning      3+0+6, cr. 3      \$24.00**  
Must be preceded by G.E. 98 and G.E. 35, or equivalent.  
Manufacturing methods and equipment, part-analysis—operation and routing sheets, bills of material, production forecasting, cost estimating, product design and development.
- G.E. 184      Tool Design      1+6+2, cr. 3      \$36.00**  
Must be preceded by G.E. 35 (Shop Laboratory: Machine Tool Work), and M.E. 66 or 67 (Machine Design).  
Economics of tool engineering, tooling programs, design of jigs, fixtures, and dies for production.
- G.E. 185      Production Control      3+0+6, cr. 3      \$24.00**  
Must be preceded by G.E. 183.  
Basic consideration of methods for control of production in manufacturing plants. Planning and scheduling of the production of small plants from route sheets and blue prints of the products.
- G.E. 186      Plant Layout      1+6+2, cr. 3      \$36.00**  
Must be preceded by G.E. 183, or equivalent.  
Design of a factory and management system to produce a selected product of definite quality and at a stated rate of output, starting from the drawings, parts, or assembled units of this product.
- G.E. 195      Wage Administration      3+0+6, cr. 3      \$24.00**  
Must be preceded by G.E. 98, 107 or 117, and 128, or equivalent.  
Job analysis, job description, job evaluation, wage payment plans.
- G.E. 196      Wage Incentives      3+0+6, cr. 3      \$ 24.00**  
Must be preceded by G.E. 98, 107 or 117, and 128, or equivalent.  
Characteristics and applications of wage incentive systems.
- G.E. 197      Job Evaluation      3+0+6, cr. 3      \$24.00**  
Must be preceded by G.E. 98, 107 or 117, and 128, or equivalent.  
Characteristics and applications of job evaluation systems.

#### Non-Credit Courses

- G.E. 01      Introductory Drawing      0+3+0, 48 hours, non-credit      \$15.00**  
Multi-view and pictorial sketching and dimensioning; use of drafting instruments and geometrical constructions; sections; screw threads; auxiliary views; assembly drawing.
- G.E. 01a      Introductory Drawing, Part I      0+2+0, 16 hours, non-credit      \$ 5.00**  
Multi-view drawing and pictorial sketching; dimensioning.
- G.E. 01b      Introductory Drawing, Part II      0+2+0, 16 hours, non-credit      \$ 5.00**  
Continuation of topics in G.E. 01a; use of drafting instruments and geometrical construction; sections.

|          |                                                                                                                                                                                                                                                                                                    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G.E. 01c | <b>Introductory Drawing, Part III</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>Continuation of topics in G.E. 01b; screw threads; auxiliary views; assembly drawing.                                                                                                                              |
| G.E. 01d | <b>Introductory Drawing, Part IV</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>General overview of the topics in G.E. 01.                                                                                                                                                                          |
| G.E. 03  | <b>Building Plan Reading</b> 0+3+0, 48 hours, non-credit \$15.00<br>Drafting and building terminology, dimensioning practices, material representation and plan symbols, elevation and plan layouts, detail sections, large-scale and full-size details, notes and specifications, building codes. |
| G.E. 03a | <b>Building Plan Reading, Part I</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>Drafting and building terminology, dimensioning practices, material representation and plan symbols, elevation and plan layouts.                                                                                    |
| G.E. 03b | <b>Building Plan Reading, Part II</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>Continuation of topics in G.E. 03a; detail sections, large-scale and full-size details.                                                                                                                            |
| G.E.03c  | <b>Building Plan Reading, Part III</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>Continuation of topics in G.E. 03b; notes and specifications.                                                                                                                                                     |
| G.E.03d  | <b>Building Plan Reading, Part IV</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>General overview of the topics in G.E. 03.                                                                                                                                                                         |
| G.E. 04  | <b>Plan Reading: Machine</b> 0+3+0, 48 hours, non-credit \$15.00<br>Use of scales, drafting and terminology, dimensioning practices, screw-thread representation, multi-view drawings, isometric sketching, sections, auxiliary views, gears.                                                      |
| G.E.04a  | <b>Plan Reading: Machine, Part I</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>Introduction to use of scales, drafting and shop terminology, dimensioning, screw-thread representation, multi-view drawing, isometric sketching.                                                                   |
| G.E. 04b | <b>Plan Reading: Machine, Part II</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>Continuation of topics in G.E. 04a; section views.                                                                                                                                                                 |
| G.E. 04c | <b>Plan Reading: Machine, Part III</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>Continuation of topics in G.E. 04b; auxiliary views and gears.                                                                                                                                                    |
| G.E. 04d | <b>Plan Reading: Machine, Part IV</b><br>0+2+0, 16 hours, non-credit \$ 5.00<br>General overview of the topics in G.E. 04.                                                                                                                                                                         |
| G.E. 007 | <b>Industrial Personnel Administration</b><br>3+0+6, 48 hours, non-credit \$24.00<br>Elementary principles of industrial personnel administration.                                                                                                                                                 |
| G.E. 017 | <b>Industrial Relations</b> 3+0+6, 48 hours, non-credit \$24.00<br>Fundamentals of employer-employee relations.                                                                                                                                                                                    |
| G.E. 027 | <b>Cost Accounting</b> 3+0+6, 48 hours, non-credit \$24.00<br>Must be preceded by G.E. 091 or equivalent.<br>Elementary methods of accounting for direct and indirect costs in production.                                                                                                         |

|                  |                                                                                                                                                                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>G.E. 061a</b> | <b>Quality Control by Statistical Methods, Part I</b><br>2+0+4, 32 hours, non-credit      \$16.00<br>Sampling techniques and the application of statistical data to the control of industrial production.                                               |
| <b>G.E. 061b</b> | <b>Quality Control by Statistical Methods, Part II</b><br>2+0+4, 32 hours, non-credit      \$16.00<br>Continuation of G.E. 061a.                                                                                                                        |
| <b>G.E. 061c</b> | <b>Quality Control by Statistical Methods, Part III</b><br>2+0+4, 32 hours, non-credit      \$16.00<br>Continuation of G.E. 061b.                                                                                                                       |
| <b>G.E. 063</b>  | <b>Wage Incentive Methods</b><br>2+0+4, 32 hours, non-credit      \$16.00<br>Must be preceded by industrial experience with wage problems.<br>Comparative study of various wage incentive plans.                                                        |
| <b>G.E. 064</b>  | <b>Principles of Inspection</b> 0+3+0, 24 hours, non-credit      \$ 8.00<br>Functions and objectives of inspection; standards and terminology; equipment; sources and interpretation of data; duties and responsibilities of specific job assignments.  |
| <b>G.E. 065</b>  | <b>Precision Measurements in the Machine Industry</b><br>0+3+0, 24 hours, non-credit      \$ 8.00<br>Inspection methods, measuring instruments and their use in control of mass production.                                                             |
| <b>G.E. 066</b>  | <b>Fundamentals of Work Simplification</b><br>2+0+4, 32 hours, non-credit      \$16.00<br>Elementary theory and practice of work simplification. Basic techniques of motion study, process and operation charts, micromotion study, and motion economy. |
| <b>G.E. 067</b>  | <b>Fundamentals of Time Study</b><br>2+0+4, 32 hours, non-credit      \$16.00<br>Elementary theory and practice of time study. Stop-watch time study; synthetic time standards, rating, fatigue and allowances.                                         |
| <b>G.E. 080</b>  | <b>Job Instruction</b> 2+0+4, 16 hours, non-credit      \$ 8.00<br>Analysis and use of job instruction methods.                                                                                                                                         |

*Mathematics is stressed as an important tool for all university students.*



|           |                                                                    |                             |         |
|-----------|--------------------------------------------------------------------|-----------------------------|---------|
| G.E. 081  | Job Methods                                                        | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Basic methods for work simplification.                             |                             |         |
| G.E. 082  | Job Relations                                                      | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | The worker in his job.                                             |                             |         |
| G.E. 083  | Production Planning                                                | 3+0+6, 48 hours, non-credit | \$24.00 |
| G.E. 083a | Production Planning, Part I: Manufacturing Methods                 | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| G.E. 083b | Production Planning, Part II: Process Engineering                  | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| G.E. 083c | Production Planning, Part III: Designing for Production            | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| G.E. 084  | Tool Design                                                        | 0+6+0, 96 hours, non-credit | \$28.00 |
| G.E. 084a | Tool Design, Part I: Cutting Tools                                 | 0+3+0, 24 hours, non-credit | \$ 7.00 |
| G.E. 084b | Tool Design, Part II: Jigs                                         | 0+3+0, 24 hours, non-credit | \$ 7.00 |
| G.E. 084c | Tool Design, Part III: Fixtures                                    | 0+3+0, 24 hours, non-credit | \$ 7.00 |
| G.E. 084d | Tool Design, Part IV: Dies                                         | 0+3+0, 24 hours, non-credit | \$ 7.00 |
| G.E. 085  | Production Control                                                 | 3+0+6, 48 hours, non-credit | \$24.00 |
| G.E. 085a | Production Control, Part I: Materials Handling and Control         | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| G.E. 085b | Production Control, Part II: Production Routing and Scheduling     | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| G.E. 085c | Production Control, Part III: Production Dispatching and Follow-up | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| G.E. 086  | Industrial Plant Layout                                            | 0+6+0, 96 hours, non-credit | \$28.00 |
| G.E. 086a | Industrial Plant Layout, Part I: Continuous Production             | 0+3+0, 48 hours, non-credit | \$14.00 |
| G.E. 086b | Industrial Plant Layout, Part II: Intermittent Production          | 0+3+0, 48 hours, non-credit | \$14.00 |
| G.E. 089  | Industrial Safety                                                  | 2+0+4, 32 hours, non-credit | \$16.00 |
|           | Basic principles of industrial safety.                             |                             |         |
| G.E. 089a | Industrial Safety, Part I                                          | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| G.E. 089b | Industrial Safety, Part II                                         | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Continuation of G.E. 089a.                                         |                             |         |
| G.E. 091  | Elements of Accounting                                             | 3+0+6, 48 hours, non-credit | \$24.00 |
|           | Elementary principles of accounting.                               |                             |         |
| G.E. 091a | Elements of Accounting, Part I                                     | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| G.E. 091b | Elements of Accounting, Part II                                    | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Continuation of G.E. 091a.                                         |                             |         |

|           |                                                      |                                  |                   |
|-----------|------------------------------------------------------|----------------------------------|-------------------|
| G.E. 091c | Elements of Accounting, Part III                     | 2+0+4, 16 hours, non-credit      | \$ 8.00           |
|           | Continuation of G.E. 091b.                           |                                  |                   |
| G.E. 091d | Elements of Accounting, Part IV: Income Tax Problems | 2+0+4, 8 or 16 hours, non-credit | \$4.00 or \$ 8.00 |
| G.E. 097  | Job Evaluation                                       | 2+0+4, 32 hours, non-credit      | \$16.00           |
|           | Comparative study of various job evaluation systems. |                                  |                   |
| G.E. 098  | Industrial Organization and Management               | 3+0+6, 48 hours, non-credit      | \$24.00           |

## *School of Mechanical Engineering*

|         |                                                                                                                                                   |              |         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| M.E. 11 | Mechanism                                                                                                                                         | 2+3+4, cr. 3 | \$30.00 |
|         | Must be preceded by E.M. 21 and M.E. 5 (Mechanical Engineering Equipment Laboratory), or equivalent.                                              |              |         |
|         | Motions and velocities of machine parts.                                                                                                          |              |         |
| M.E. 29 | Elementary Heat Power                                                                                                                             | 3+0+6, cr. 3 | \$24.00 |
|         | Must be preceded by Phys. 21 and Math. 3.                                                                                                         |              |         |
|         | Fuels and combustion, internal combustion engines, steam generation, turbines, heat exchanges, fans and pumps.                                    |              |         |
| M.E. 40 | Thermodynamics                                                                                                                                    | 3+0+6, cr. 3 | \$24.00 |
|         | Must be preceded by M.E. 29, Math. 4 and M.E. 5, or equivalent.                                                                                   |              |         |
|         | First law: properties of liquids and gases; energy effects for gas and vapor changes; second law: entropy; flow of fluids.                        |              |         |
| M.E. 41 | Thermodynamics                                                                                                                                    | 3+0+6, cr. 3 | \$24.00 |
|         | Continuation of M.E. 40. Gas-vapor mixtures, combustion, gas and vapor cycles, compressors, refrigeration, heat transfer.                         |              |         |
| M.E. 65 | Dynamics of Machinery                                                                                                                             | 2+3+4, cr. 3 | \$30.00 |
|         | Must be preceded by credit in M.E. 11 and E.M. 21.                                                                                                |              |         |
|         | Velocities, accelerations, working and inertia forces in machine parts.                                                                           |              |         |
| M.E. 66 | Machine Design                                                                                                                                    | 3+6+6, cr. 5 | \$53.00 |
|         | Must be preceded by credit in M.E. 65 and E.M. 22.                                                                                                |              |         |
|         | Proportioning of machine parts according to laws of mechanics, with attention to function, production, and economic factors; design of a machine. |              |         |

### Non-Credit Courses

|           |                                                                                                                                     |                             |         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------|
| M.E. 015  | Elementary Heat Transfer*                                                                                                           | 3+0+6, 48 hours, non-credit | \$24.00 |
|           | Elementary principles of heat transfer and their application to industry.                                                           |                             |         |
| M.E. 015a | Elementary Heat Transfer, Part I*                                                                                                   | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Selected topics from M.E. 015.                                                                                                      |                             |         |
| M.E. 015b | Elementary Heat Transfer, Part II*                                                                                                  | 2+0+4, 32 hours, non-credit | \$16.00 |
|           | Selected topics from M.E. 015.                                                                                                      |                             |         |
| M.E. 016  | Refrigeration*                                                                                                                      | 3+0+6, 48 hours, non-credit | \$24.00 |
|           | Basic principles of refrigeration and their application to the installation, operation, and maintenance of refrigeration equipment. |                             |         |

\* The student must have a working knowledge of algebraic concepts and basic principles of physics.

|           |                                                                                                                                                                                                                                                                                                   |                             |         |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------|
| M.E. 016a | <b>Refrigeration, Part I*</b>                                                                                                                                                                                                                                                                     | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Selected topics from M.E. 016.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 016b | <b>Refrigeration, Part II*</b>                                                                                                                                                                                                                                                                    | 2+0+4, 32 hours, non-credit | \$16.00 |
|           | Selected topics from M.E. 016.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 017  | <b>Heating and Ventilating*</b>                                                                                                                                                                                                                                                                   | 3+0+6, 48 hours, non-credit | \$24.00 |
|           | Types of heating systems, heating transmission and installation, fans and ducts, and auxiliary equipment.                                                                                                                                                                                         |                             |         |
| M.E. 017a | <b>Heating and Ventilating, Part I*</b>                                                                                                                                                                                                                                                           | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Selected topics from M.E. 017.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 017b | <b>Heating and Ventilating, Part II*</b>                                                                                                                                                                                                                                                          | 2+0+4, 32 hours, non-credit | \$16.00 |
|           | Selected topics from M.E. 017.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 018  | <b>Steam Power Plant Equipment*</b>                                                                                                                                                                                                                                                               | 3+0+6, 48 hours, non-credit | \$24.00 |
|           | General principles and types of steam power plant equipment.                                                                                                                                                                                                                                      |                             |         |
| M.E. 018a | <b>Steam Power Plant Equipment, Part I*</b>                                                                                                                                                                                                                                                       | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Selected topics from M.E. 018.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 018b | <b>Steam Power Plant Equipment, Part II*</b>                                                                                                                                                                                                                                                      | 2+0+4, 32 hours, non-credit | \$16.00 |
|           | Selected topics from M.E. 018.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 019  | <b>Steam Power Plant Testing*</b>                                                                                                                                                                                                                                                                 | 3+0+6, 48 hours, non-credit | \$24.00 |
|           | Interpretation and testing of power plant test codes and equipment.                                                                                                                                                                                                                               |                             |         |
| M.E. 019a | <b>Steam Power Plant Testing, Part I*</b>                                                                                                                                                                                                                                                         | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Selected topics from M.E. 019.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 019b | <b>Steam Power Plant Testing, Part II*</b>                                                                                                                                                                                                                                                        | 2+0+4, 32 hours, non-credit | \$16.00 |
|           | Selected topics from M.E. 019.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 020  | <b>Lubricants and Lubrication*</b>                                                                                                                                                                                                                                                                | 3+0+6, 48 hours, non-credit | \$24.00 |
|           | Properties of oils and greases; oil film formation in a bearing; relationship between friction and other factors; description of oiling devices and systems; lubrication of such machines as steam turbines, gear units, air compressors, refrigerators, and other machines of interest to group. |                             |         |
| M.E. 020a | <b>Lubricants and Lubrication, Part I*</b>                                                                                                                                                                                                                                                        | 2+0+4, 16 hours, non-credit | \$ 8.00 |
|           | Selected topics from M.E. 020.                                                                                                                                                                                                                                                                    |                             |         |
| M.E. 020b | <b>Lubricants and Lubrication, Part II*</b>                                                                                                                                                                                                                                                       | 2+0+4, 32 hours, non-credit | \$16.00 |
|           | Selected topics from M.E. 020.                                                                                                                                                                                                                                                                    |                             |         |

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\* The student must have a working knowledge of algebraic concepts and basic principles of physics.

# School of Home Economics

## APPLIED DESIGN

|         |                                                                     |                               |                    |
|---------|---------------------------------------------------------------------|-------------------------------|--------------------|
| A.D. 51 | Survey of the Arts                                                  | 3+0+6, cr. 3                  | \$24.00            |
|         | Introductory study of visual arts in relation to problems of today. |                               |                    |
| A.D. 55 | Art Appreciation                                                    | 2+0+4, cr. 2, or 3+0+6, cr. 3 | \$16.00 or \$24.00 |

## CLOTHING AND TEXTILES

|            |                                                                                             |              |         |
|------------|---------------------------------------------------------------------------------------------|--------------|---------|
| C. & T. 2  | Clothing the Individual                                                                     | 3+0+6, cr. 3 | \$24.00 |
|            | Must be preceded or accompanied by A.D. 51.<br>Selection and care of clothing and textiles. |              |         |
| C. & T. 27 | Wardrobe Planning                                                                           | 2+0+4, cr. 2 | \$16.00 |
|            | Fundamentals of costume selection and clothing budgets.                                     |              |         |

## Non-Credit Courses

|             |                                                         |                                   |                    |
|-------------|---------------------------------------------------------|-----------------------------------|--------------------|
| C. & T. 002 | Grooming and Personal Appearance                        | 2+0+4, 16 or 32 hours, non-credit | \$ 8.00 or \$16.00 |
| C. & T. 027 | Clothing the Family                                     | 2+0+4, 16 or 32 hours, non-credit | \$ 8.00 or \$16.00 |
|             | Fundamentals of costume selection and clothing budgets. |                                   |                    |

## FAMILY LIFE

|          |                                                                                                                                                                                |              |         |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| F.L. 9   | Family Health                                                                                                                                                                  | 2+0+4, cr. 2 | \$16.00 |
|          | Lectures and demonstration on fundamental principles of nursing in the home, disease prevention, and maternal and infant care.                                                 |              |         |
| F.L. 171 | Marriage and Family Relationships                                                                                                                                              | 3+0+6, cr. 3 | \$24.00 |
|          | Designed to provide further understanding of family relationships for those unmarried, those contemplating marriage, those married, and prospective counselors of all of them. |              |         |

## FOODS AND NUTRITION

|             |                                                                                                                                         |              |         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| F. & N. 1   | Food Selection                                                                                                                          | 2+0+4, cr. 2 | \$16.00 |
|             | Selection of foods to make an adequate diet.                                                                                            |              |         |
| F. & N. 13  | Family Food Problems                                                                                                                    | 2+0+4, cr. 2 | \$16.00 |
|             | Food selection for different income levels. Food buying and utilization; retail costs; varieties, brands, and grades. Food legislation. |              |         |
| F. & N. 136 | Readings in Foods and Nutrition                                                                                                         | 2+0+4, cr. 2 | \$16.00 |
|             | Must be preceded by courses approved by the Department.                                                                                 |              |         |

## Non-Credit Course

|             |                                         |                                   |                    |
|-------------|-----------------------------------------|-----------------------------------|--------------------|
| F. & N. 013 | Food for the Family                     | 2+0+4, 16 or 32 hours, non credit | \$ 8.00 or \$16.00 |
|             | Designed for the beginning housekeeper. |                                   |                    |

## HOME MANAGEMENT

|        |                                                                                                 |              |         |
|--------|-------------------------------------------------------------------------------------------------|--------------|---------|
| H.M. 8 | The House                                                                                       | 3+0+6, cr. 3 | \$24.00 |
|        | Must be preceded by H.M. 7 (The House—Planning of Modern Homes).<br>Furnishing the modern home. |              |         |

|         |                                                                                                |                  |         |
|---------|------------------------------------------------------------------------------------------------|------------------|---------|
| H.M. 69 | Housing the Family                                                                             | 3 + 0 + 6, cr. 3 | \$24.00 |
|         | Must be preceded by Applied Design 51 and 51L.<br>Housing of familys at various income levels. |                  |         |

Non-Credit Courses

|          |                                  |                                       |                    |
|----------|----------------------------------|---------------------------------------|--------------------|
| H.M. 08  | Decoration of the Modern Home    | 2 + 0 + 4, 16 or 32 hours, non-credit | \$ 8.00 or \$16.00 |
| H.M. 08a | Selection of Furniture           | 2 + 0 + 4, 16 hours, non-credit       | \$ 8.00            |
| H.M. 08b | Selection of Household Textiles  | 2 + 0 + 4, 16 hours, non-credit       | \$ 8.00            |
| H.M. 08c | Color in the Home                | 2 + 0 + 4, 16 hours, non-credit       | \$ 8.00            |
| H.M. 08d | Selection of Household Equipment | 2 + 0 + 4, 16 hours, non-credit       | \$ 8.00            |

INSTITUTION MANAGEMENT

|          |                                                                                                                                                                                                                                                                            |                  |         |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------|
| I.M. 136 | School Lunchroom Management                                                                                                                                                                                                                                                | 3 + 0 + 6, cr. 3 | \$24.00 |
|          | For graduates in Home Economics who are managing lunchrooms and who have had courses in foods and nutrition approved by the Department.<br>Survey of school lunchroom problems; menu planning; purchase, preparation, and service of food; records; management; equipment. |                  |         |
| I.M. 139 | Institution Food Purchasing                                                                                                                                                                                                                                                | 2 + 2 + 5, cr. 3 | \$25.00 |
|          | Must be preceded by I.M. 38 (Menu Planning), 38L (Quantity Cookery Laboratory), or 35 (Hospital Administration).<br>Methods of buying, bases of selection and storage of food.                                                                                             |                  |         |

Non-Credit Course

|          |                                                                                                                                         |                            |                    |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------|
| I.M. 040 | Cafeteria and Restaurant Management                                                                                                     | 16 or 32 hours, non-credit | \$ 8.00 or \$16.00 |
|          | Survey of cafeteria and restaurant problems; menu planning; purchase, preparation, and service of food; records; management; equipment. |                            |                    |

# *School of Pharmacy*

PRE-PHARMACY YEAR. In the past the School of Pharmacy has admitted students directly from high school. In the future a pre-pharmacy year will be followed by a three-year professional program in the School of Pharmacy. Beginning with January 1, 1949, students who expect to apply for admission to the School of Pharmacy with sophomore standing should enroll as freshmen in the School of Science (Pre-Pharmacy Option).

Students taking the pre-pharmacy year in colleges other than the School of Science, Purdue University, should submit 30 or more semester hours of credit, including the following:

|                                        |                |
|----------------------------------------|----------------|
| General Inorganic Chemistry            | 6 hours        |
| Mathematics (Algebra and Trigonometry) | 6 hours        |
| English Composition                    | 3 hours        |
| Speech or Rhetoric                     | 3 hours        |
| Botany                                 | 4 hours        |
| Zoology                                | 4 hours        |
| Approved Electives                     | 4 to 6 hours   |
| Total                                  | 30 to 32 hours |

Approved electives include:

|                                                    |              |
|----------------------------------------------------|--------------|
| Modern Language .....                              | 6 hours      |
| Principles of Economics .....                      | 3 or 6 hours |
| Introductory Sociology .....                       | 3 hours      |
| Elementary Psychology .....                        | 3 hours      |
| Engineering Drawing .....                          | 2 or 4 hours |
| American Government .....                          | 3 or 6 hours |
| Mathematics (Analytic Geometry and Calculus) ..... | 6 hours      |
| English Literature or Expository Writing .....     | 3 hours      |

If an applicant has the required number of hours of academic credit but does not have credit for all prescribed subjects, he may be admitted with eight semester hours of deficiency, which must be made up before graduation.

The attention of applicants is directed to the following admission and residence provisions:

1. Students who have completed the pre-pharmacy year at Purdue or elsewhere cannot be assured of admission to the School of Pharmacy. When the number of qualified applicants exceeds the available facilities, preference will be given to residents of Indiana, and selection of students will be made on the basis of qualifications as determined from the transcript of record, examinations, and personal interviews.

2. Students will enter the professional program of study in the School of Pharmacy only at the beginning of the fall semester of each academic year.

3. Three years' residence in an accredited school or college of pharmacy is required for qualification for the degree of Bachelor of Science in Pharmacy.

## *School of Science*

### BIOLOGY

|           |                                                                                                                                                                                                      |              |                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------|
| Biol. 5   | <b>Biology of Animals</b><br>Basic biological principles of animals.                                                                                                                                 | 3+3+6, cr. 4 | \$43.00            |
| Biol. 6   | <b>Introduction to Plant Life</b><br>Fundamental principles of structure and function of higher plants and a consideration of representative members of each plant group.                            | 3+3+6, cr. 4 | \$43.00            |
| Biol. 18* | <b>Bacteriology</b><br>2+0+4, cr. 2*, or 2+4+6, cr. 4<br>Must be preceded by Biol. 5 and 6.<br>General bacteriology; methods of detection, isolation, and identification.                            |              | \$16.00 or \$40.00 |
| Biol. 39a | <b>Physiology, Part I</b><br>Must be preceded by Biol. 1-2, or 5.<br>Physiology of tissues in general; muscle, nerve, brain, and sense organs.                                                       | 3+0+6, cr. 3 | \$24.00            |
| Biol. 39b | <b>Physiology, Part II</b><br>Must be preceded by Biol. 1-2, or 5.<br>Physiology of circulation, respiration, digestion, excretion, and endocrine glands.                                            | 3+0+6, cr. 3 | \$24.00            |
| Biol. 121 | <b>Pathogenic Bacteriology</b><br>Must be preceded by Biol. 18.<br>Pathogenic bacteria, protozoa, and viruses; infection, prevention, immunity, postmortem, serum reactions, and diagnostic methods. | 2+4+6, cr. 4 | \$40.00            |

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\* Requires special campus approval for two-credit course.

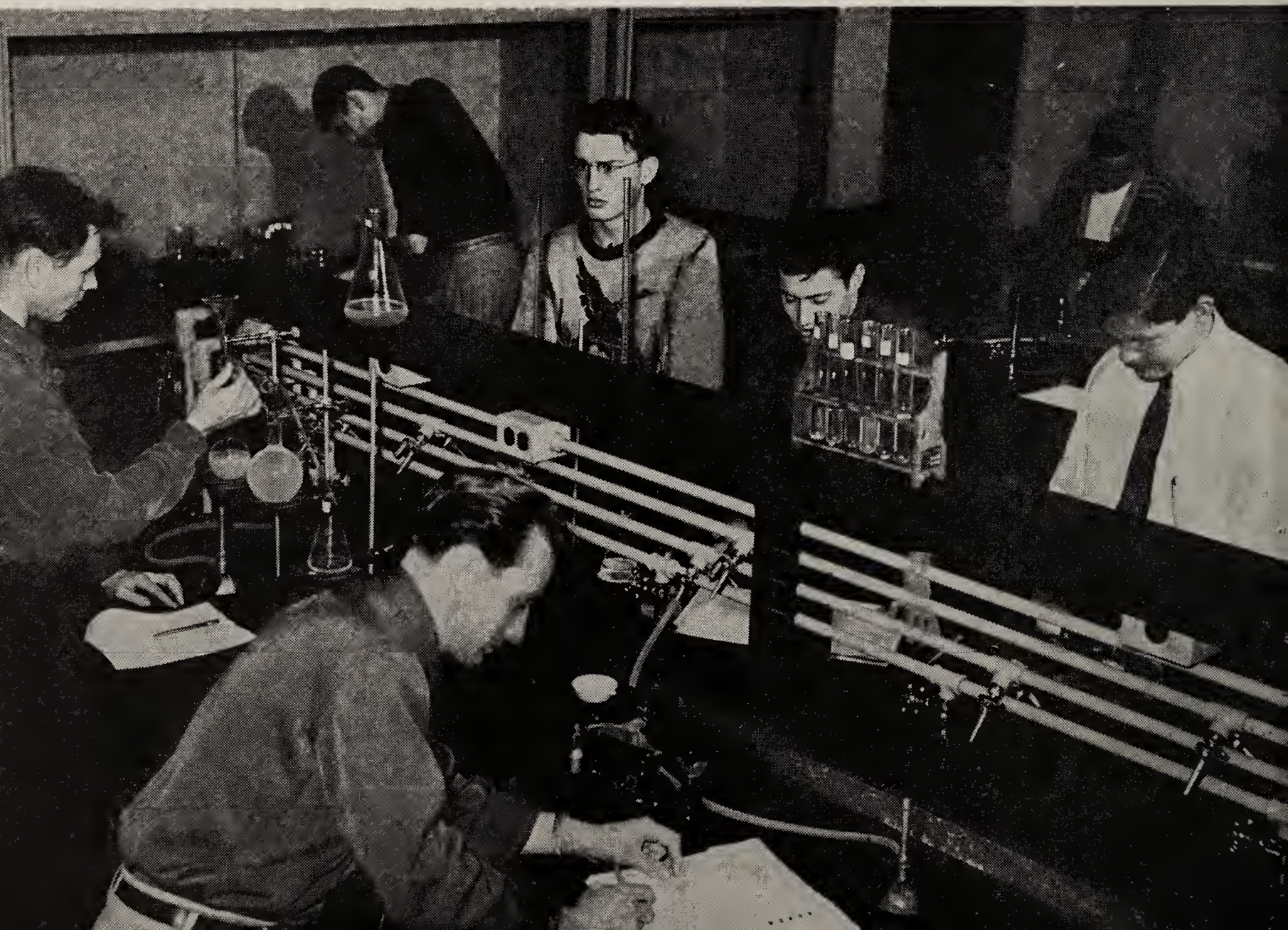
## CHEMISTRY

|           |                                                                                                                                                                                                                                                                                                       |               |         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|
| Chem. 1   | <b>General Chemistry</b><br>1 lecture, 2 recitations, 1 laboratory.<br>Survey of laws and principles of chemistry, with special emphasis upon topics most likely to be of importance in engineering. Numerical problems and relationships are introduced whenever quantitative treatment is possible. | 3+3+6, cr. 4  | \$43.00 |
| Chem. 2   | <b>General Chemistry</b><br>1 lecture, 2 recitations, 1 laboratory.<br>Continuation of Chemistry 1. Minimum requirements of all engineering students, and science students majoring in chemistry, mathematics, and physics.                                                                           | 3+3+6, cr. 4  | \$43.00 |
| Chem. 11  | <b>General Chemistry</b><br>1 lecture, 1 recitation, 1 laboratory.<br>Required of all freshmen registered in the Schools of Agriculture, Home Economics, Pharmacy, and Science who are not in Chem. 1-2.                                                                                              | 2+3+4, cr. 3  | \$35.00 |
| Chem. 12  | <b>General Chemistry</b><br>1 lecture, 1 recitation, 1 laboratory.<br>Continuation of Chem. 11, for all students who are not in Chem. 2.                                                                                                                                                              | 2+3+4, cr. 3  | \$35.00 |
| Chem. 26  | <b>Qualitative Analysis</b><br>Should be preceded by Chem. 2 or 12.<br>Semi-micro qualitative analysis for cations and anions. Introduction to chemistry of some less-familiar elements.                                                                                                              | 2+6+4, cr. 4  | \$53.00 |
| Chem. 29† | <b>Organic Chemistry</b><br>Must be preceded by Chem. 2 or 12.<br>Survey of organic chemistry with emphasis on class reaction and practical applications.                                                                                                                                             | 3+0+6, cr. 3† | \$24.00 |

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† Chemistry majors will receive two credits for this course. It may be substituted in lieu of lecture-recitation credit in Chem. 107 (Organic Chemistry). Chemistry majors are not eligible for Chem. 30.

*Students enjoy working in modern, well-equipped chemistry laboratories.*



|           |                                                                                                                       |              |         |
|-----------|-----------------------------------------------------------------------------------------------------------------------|--------------|---------|
| Chem. 30  | <b>Organic Chemistry</b><br>Continuation of Chem. 29.                                                                 | 3+0+6, cr. 3 | \$24.00 |
| Chem. 105 | <b>Quantitative Analysis</b><br>Must be preceded by Chem. 26.<br>Introduction to gravimetric and titrimetric methods. | 2+6+4, cr. 4 | \$53.00 |

#### Non-Credit Courses

|            |                                                                                                                                                                                                                                                                                                                          |         |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Chem. 001  | <b>Principles of Chemistry</b> 2+0+4, 16 hours, non-credit<br>Basic laws and principles with emphasis on topics of importance to industry.                                                                                                                                                                               | \$ 8.00 |
| Chem. 002a | <b>Industrial Chemicals—Laboratory Testing</b><br>0+3+0, 24 hours, non-credit<br>Must be preceded by Chem. 001, or equivalent. However, it would be advantageous for the student to precede this course by Ch.E. 001.<br>Qualitative identification of materials of importance to industry.                              | \$ 9.00 |
| Chem. 002b | <b>Survey of Analytical Methods</b><br>2+0+4, 16 hours, non-credit<br>Must be preceded by Chem. 001, or equivalent.<br>Principles of qualitative and quantitative methods of analysis, uses and limitations of methods—x-ray, electron microscope, photo-electrometer, spectroscopy, infra-red, ultrasonics, and others. | \$ 8.00 |
| Chem. 003  | <b>Fundamentals of Organic Chemistry</b><br>2+0+4, 16 hours, non-credit<br>Basic concepts of the carbon atom and simple carbon compounds.                                                                                                                                                                                | \$ 8.00 |
| Chem. 004a | <b>Food Chemistry</b> 2+0+4, 16 hours, non-credit<br>Must be preceded by Chem. 003, or equivalent.<br>Chemistry of carbohydrates, proteins, and fats.                                                                                                                                                                    | \$ 8.00 |
| Chem. 004b | <b>Chemicals of Medicinal Value</b><br>2+0+4, 16 hours, non-credit<br>Must be preceded by Chem. 003, or equivalent.                                                                                                                                                                                                      | \$ 8.00 |

#### ENGLISH

|           |                                                                                                                                                                                                                                                                                                                                                  |                    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Engl. A   | <b>English Composition</b> 3+0+6, non-credit<br>For students who fail to pass the preliminary examination.                                                                                                                                                                                                                                       | \$24.00            |
| Engl. 1   | <b>English Composition</b> 3+0+6, cr. 3<br>Prerequisite to all other courses in English except Engl. A, B, C, E, and 32.                                                                                                                                                                                                                         | \$24.00            |
| Engl. 19  | <b>Introduction to the Drama</b> 3+0+6, cr. 3                                                                                                                                                                                                                                                                                                    | \$24.00            |
| Engl. 27  | <b>Introduction to Fiction</b> 3+0+6, cr. 3                                                                                                                                                                                                                                                                                                      | \$24.00            |
| Engl. 30* | <b>Practical Writing for Industry</b><br>2+0+4, cr. 2*, or 3+0+6, cr. 3<br>Must be preceded by Engl. 1 or equivalent.                                                                                                                                                                                                                            | \$16.00 or \$24.00 |
| Engl. 31  | <b>Expository Writing</b> 3+0+6, cr. 3<br>Students who have received a grade of 6 or 5 in Engl. 1 and grades of 6, 5, or 4 in two subsequent courses in English and Speech may, with the approval of the head of the Department of English, substitute for Engl. 31 an advanced course in English or in another department.                      | \$24.00            |
| Engl. 32  | <b>English Composition</b> 3+0+6, cr. 3<br>For freshmen provisionally excused from Engl. 1 because of superior accomplishment in composition as shown in the orientation tests. Students who pass the course will be excused from Engl. 31. Those who receive grade 4 or better will also be given credit for Engl. 1; others must take Engl. 1. | \$24.00            |
| Engl. 132 | <b>Modern English and American Poetry</b> 3+0+6, cr. 3                                                                                                                                                                                                                                                                                           | \$24.00            |

\* Requires special campus approval for two-credit course.

Engl. 137      **Advanced English Composition**      3+0+6, cr. 3      \$24.00

### Non-Credit Courses

Engl. 001      **Everyday English**  
                                          2+0+4, 16 or 32 hours, non-credit      \$ 8.00 or \$16.00  
 Grammar, punctuation, and spelling, and their application in writing.

Engl. 002      **How to Read and Evaluate Fiction**  
                                          2+0+4, 16 or 32 hours, non-credit      \$ 8.00 or \$16.00

Engl. 003      **Business Letter Writing**  
                                          2+0+4, 16 or 32 hours, non-credit      \$ 8.00 or \$16.00  
 Form and content of routine types of business letters.

Engl. 004      **Report Writing**  
                                          2+0+4, 16 or 32 hours, non-credit      \$ 8.00 or \$16.00  
 Form and content of routine types of business and technical reports.

### SPEECH

Speech 11\*      **Public Speaking**      2+0+4, cr. 2      \$16.00  
 1 two-hour class period per week, primarily for part-time students.  
 Basic elements of delivery and simple forms of speech composition, with practice to develop self-confidence and fluency.

Speech 12\*      **Public Speaking**      2+0+4, cr. 2      \$16.00  
 1 two-hour class period per week, primarily for part-time students.  
 Continuation of Speech 11. Study of speech composition with practice in preparation and delivery of information and persuasive speeches.

Speech 14\*      **Principles of Speech**      3+0+6, cr. 3      \$24.00  
 3 one-hour meetings per week.

### Non-Credit Courses

NOTE: Each of non-credit courses listed below (Speech 01, 02, 03, 08, and 09), are designed for one two-hour meeting each week for eight weeks.

Speech 01\*\*      **Basic Public Speaking**      2+0+4, 16 hours, non-credit      \$ 8.00  
 Beginning course in public speaking designed to develop self-confidence and basic skill in presentation of simple forms of public speaking.

Speech 02\*\*      **Informative and Persuasive Speaking**      2+0+4, 16 hours, non-credit      \$ 8.00  
 Study and practice in preparation and delivery of basic types of public speaking. Special emphasis on clear organization, use of interesting and logical material, and effective delivery.

Speech 03\*\*      **Discussion, Leadership, and Participation**      2+0+4, 16 hours, non-credit      \$ 8.00  
 Study and practice in preparation and conduct of group conferences, panel discussions, study groups, and committee meetings.

Speech 08      **Practical Speaking**      2+0+4, 16 hours, non-credit      \$ 8.00  
 Practice in preparation and delivery of public speeches, intended for mature adults who wish to improve their speaking ability. Emphasis is placed on frequent practice with individual guidance and criticism.

Speech 09      **Parliamentary Procedure for Conducting Meetings**      2+0+4, 16 hours, non-credit      \$ 8.00  
 Study and practice in use of parliamentary law, and in organization and conduct of both formal and informal business meetings.

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\* Credit in Speech 11 and 12 combined may be accepted in lieu of Speech 14 as a requirement for graduation. Credit can not be earned in both Speech 14 and the Speech 11 and 12 combination.

\*\* Speech 01, 02, and 03 may be offered separately or as an integrated sequence.

## HISTORY

|           |                                                                                 |              |         |
|-----------|---------------------------------------------------------------------------------|--------------|---------|
| Hist. 2   | European History, 1815-1914                                                     | 3+0+6, cr. 3 | \$24.00 |
| Hist. 3   | Europe Since 1914                                                               | 3+0+6, cr. 3 | \$24.00 |
|           | Credit will not be given for both Hist. 1 (History of Europe since 1914) and 3. |              |         |
| Hist. 5   | The United States and Its Place in<br>World Affairs                             | 3+0+6, cr. 3 | \$24.00 |
|           | History of United States since 1914, and its participation in world affairs.    |              |         |
| Hist. 106 | American History to 1865                                                        | 3+0+6, cr. 3 | \$24.00 |
| Hist. 107 | American History from 1865 to the<br>Present Time                               | 3+0+6, cr. 3 | \$24.00 |

### Non-Credit Courses

|           |                                                  |                                   |                    |
|-----------|--------------------------------------------------|-----------------------------------|--------------------|
| Hist. 01  | Contemporary European History                    | 2+0+4, 16 or 32 hours, non-credit | \$ 8.00 or \$16.00 |
| Hist. 05  | The United States and Its Place in World Affairs | 2+0+4, 16 or 32 hours, non-credit | \$ 8.00 or \$16.00 |
| Hist. 010 | Political and Cultural Survey of Russia          | 2+0+4, 16 or 32 hours, non-credit | \$ 8.00 or \$16.00 |

## ECONOMICS

|            |                                                                                                                                             |                                |                    |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------|
| Econ. 1    | Principles of Economics                                                                                                                     | 3+0+6, cr. 3                   | \$24.00            |
|            | Credit will not be given for both Econ. 1 and 11 (Principles of Economics).                                                                 |                                |                    |
| Econ. 11   | Principles of Economics                                                                                                                     | 3+0+6, cr. 3                   | \$24.00            |
|            | Credit will not be given for both Econ. 1 and 11.                                                                                           |                                |                    |
| Econ. 12   | Principles of Economics                                                                                                                     | 3+0+6, cr. 3                   | \$24.00            |
|            | Must be preceded by Econ. 1 or 11.                                                                                                          |                                |                    |
| Econ. 121  | Labor Economics                                                                                                                             | 3+0+6, cr. 3                   | \$24.00            |
|            | Must be preceded by Econ. 1 or 11.                                                                                                          |                                |                    |
| Econ. 124  | Labor Law                                                                                                                                   | 3+0+6, cr. 3                   | \$24.00            |
|            | Must be preceded by Econ. 121, or consent of instructor.<br>Court decisions in respect to labor.                                            |                                |                    |
| Econ. 125* | Business Law                                                                                                                                | 2+0+4, cr. 2*, or 3+0+6, cr. 3 | \$16.00 or \$24.00 |
|            | Must be preceded by Econ. 1 or 11, or equivalent.<br>Introduction to American business law, covering persons, torts, contracts, and agency. |                                |                    |
| Econ. 130* | Economic Geography                                                                                                                          | 2+0+4, cr. 2*, or 3+0+6, cr. 3 | \$16.00 or \$24.00 |
|            | Geographic factors determining production and industry in principal regions of the world.                                                   |                                |                    |

### Non-Credit Courses

|           |                                                                                                                                                                             |                                   |                    |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------|
| Econ. 01  | Principles of Economics                                                                                                                                                     | 2+0+4, 16 or 32 hours, non-credit | \$ 8.00 or \$16.00 |
| Econ. 010 | Industrial Economics                                                                                                                                                        | 2+0+4, 12 or 16 hours, non-credit | \$ 6.00 or \$ 8.00 |
|           | Factors determining our standard of living and how this standard is affected by restrictive practices, the level of prices, and the maturity and immaturity of the economy. |                                   |                    |

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\* Requires special campus approval for two-credit course.

## CHARTERED LIFE UNDERWRITERS (CLU) REVIEW COURSES

These courses are open to men and women engaged in the life insurance business who have had at least a high school education and one year of experience in the life insurance business supplemented by such additional experience as may be required by the CLU admissions committee. The courses are designed to facilitate the taking of examinations leading to Chartered Life Underwriters (CLU) designation.

- Econ. 05a**      **CLU—Life Insurance Fundamentals**  
2+0+4, 32 hours or 3+0+6, 48 hours, non-credit  
\$16.00 or \$24.00
- In addition to meeting the minimum requirements all candidates preparing for Part A of the CLU examinations should be acquainted with the fundamentals of personal salesmanship and of sales psychology in order that they may be more effective in the use of the subject matter covered in Part A even though questions in these fields are not included in the Part A examination.
- Part A includes economics and uses of life insurance; analysis of contracts; mathematics of rates and reserves; life insurance trusts; business insurance; group, industrial, and other forms of insurance; investments of insurance companies.
- Econ. 05b**      **CLU—Background Education for Insurance**  
2+0+4, 32 hours or 3+0+6, 48 hours, non-credit  
\$16.00 or \$24.00
- This background education in the field of social studies includes economics, government, and sociology. Emphasis is placed on such phases as will prove useful in supplying insurance men with fundamental principles in these related fields.
- Econ. 05c**      **CLU—Law, Trust and Taxes**  
2+0+4, 32 hours or 3+0+6, 48 hours, non-credit  
\$16.00 or \$24.00
- Fundamental principles of general commercial law; wills, trusts, and estates; taxation and business insurance.
- Econ. 05d**      **CLU—Finance**  
2+0+4, 32 hours, or 3+0+6, 48 hours, non-credit  
\$16.00 or \$24.00
- This review course is divided into three parts—corporation finance; money, credit, and banking; and investments. The financing of corporations; consideration of corporation securities. Principles underlying money, essential features of the American banking and credit system. Fundamentals of investments; life insurance as an investment.
- Econ. 05e**      **CLU—Life Underwriters (Comprehensive)**  
2+0+4, 32 hours or 3+0+6 48 hours, non-credit  
\$16.00 or \$24.00
- Comprehensive review of the fundamental principles designed to facilitate orientation for the taking of examinations leading to the Chartered Life Underwriters designation.

## GOVERNMENT

- Govt. 9**      **Introduction to American Government** 3+0+6, cr. 3      \$24.00
- Govt. 10**      **Introduction to American Government** 3+0+6, cr. 3      \$24.00  
Must be preceded by Govt. 9.  
Continuation of Govt. 9.

**Govt. 30**      **Elements of Democracy**      3+0+6, cr. 3      \$24.00  
 Not open to students who have had Govt. 9 or 10 (Introduction to American Government).  
 Fundamental problems all governments must face, and how they are met in a democracy as contrasted with other types of society.

**Govt. 109\***      **International Relations**      2+0+4, cr. 2\*, or 3+0+6, cr. 3      \$16.00 or \$24.00  
 Introductory survey of underlying forces in international relations, foreign policies of the Great Powers, and agencies of control and cooperation.

**Govt. 110\***      **Contemporary International Problems**      2+0+4, cr. 2\*, or 3+0+6, cr. 3      \$16.00 or \$24.00  
 Current international issues and developments in international cooperation and world order.

#### Non-Credit Courses

**Govt. 020**      **Government in Action**      2+0+4, 16 hours, non-credit      \$ 8.00

**Govt. 025**      **Contemporary Political and Social Problems**      2+0+4, 16 or 32 hours, non-credit      \$ 8.00 or \$16.00

### MATHEMATICS

NOTE: Engineering students take Math. 1, 2, 3 and 4, (Math. 5 instead of Math. 4 in Electrical Engineering; Math. 4 and 107 may be substituted for Math. 5). Those with inadequate preparation take Math. 31, 32, 3 and 4. Science students majoring in mathematics, physics, and chemistry should take the same sequence as engineering students. Other science students take Math. 11 and 12. Students may substitute Math. 11 and 12 when Math. 1 is unavailable.

**Math. 1**      **Algebra and Trigonometry**      5+0+10, cr. 5      \$40.00  
 Required for engineering students and those science students who major in mathematics, physics, or chemistry. Students with inadequate preparation will be assigned to Math. 31.

**Math. 2**      **Analytic Geometry**      5+0+10, cr. 5      \$40.00  
 Must be preceded by Math. 1, or 11 and 12.

**Math. 3**      **Calculus I**      4+0+8, cr. 4      \$32.00  
 Must be preceded by Math. 2 or 32.

**Math. 4**      **Calculus II**      4+0+8, cr. 4      \$32.00  
 Must be preceded by Math. 3.

**Math. 11**      **Trigonometry**      3+0+6, cr. 3      \$24.00  
 Should be preceded by Math. 12.

**Math. 12**      **Algebra**      3+0+6, cr. 3      \$24.00

**Math. 31**      **Elementary Engineering Mathematics**      6+0+12, cr. 5      \$48.00  
 For engineering students with inadequate preparation for Math. 1.

**Math. 32**      **Elementary Engineering Mathematics**      6+0+12, cr. 5      \$48.00  
 Continuation of Math. 31.

**Math. 51**      **Elementary Statistics**      3+0+6, cr. 3      \$24.00  
 Must be preceded by Math. 11 and 12, or equivalent.  
 Emphasis on practical applications to all fields; machine calculation and interpretation of data.

**Math. 52**      **Elementary Statistics**      3+0+6, cr. 3      \$24.00  
 Continuation of Math. 51.

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\* Requires special campus approval for two-credit course.

|           |                                                                                                                                                                                                                                                   |              |         |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| Math. 107 | <b>Differential Equations</b><br>Must be preceded by Math. 4.<br>Derivations and solutions of differential equations for problems in physics, chemistry and engineering.                                                                          | 3+0+6, cr. 3 | \$24.00 |
| Math. 127 | <b>Advanced Calculus</b><br>Must be preceded by Math. 4.<br>Limits, continuity, and differentiation of functions of one and several variables; the Riemann integral; multiple, line, and surface integrals.                                       | 3+0+6, cr. 3 | \$24.00 |
| Math. 128 | <b>Advanced Calculus</b><br>Continuation of Math. 127.<br>The real number system, infinite series, power series, Fourier series, improper integrals, gamma function, implicit functions, Jacobians. Emphasis on rigorous proof.                   | 3+0+6, cr. 3 | \$24.00 |
| Math. 155 | <b>Statistical Methods in Engineering</b><br>Must be preceded by Math. 4, or equivalent.<br>Frequency distribution, control charts for measurements and attributes, simple probability, acceptance sampling, linear correlation and applications. | 3+0+6, cr. 3 | \$24.00 |

#### Non-Credit Courses

|            |                                                                                                |                      |                    |
|------------|------------------------------------------------------------------------------------------------|----------------------|--------------------|
| Math. 001  | <b>Arithmetic for Adults</b><br>20-60 hours depending on the needs<br>of the group, non-credit |                      | \$10.00 to \$30.00 |
| Math. 000a | <b>High School Algebra, 1st semester</b>                                                       | 51 hours, non-credit | \$25.00            |
| Math. 000b | <b>High School Algebra, 2nd semester</b>                                                       | 51 hours, non-credit | \$25.00            |
| Math. 000c | <b>High School Algebra, 3rd semester</b>                                                       | 51 hours, non-credit | \$25.00            |
| Math. 00a  | <b>Plane Geometry, 1st semester</b>                                                            | 51 hours, non-credit | \$25.00            |
| Math. 00b  | <b>Plane Geometry, 2nd semester</b>                                                            | 51 hours, non-credit | \$25.00            |
| Math. 0    | <b>Solid Geometry</b>                                                                          | 34 hours, non-credit | \$17.00            |
| Math. 002a | <b>Essentials of Slide Rule Operation</b><br>2+0+4, 10 hours, non-credit                       |                      | \$ 5.00            |
| Math. 002b | <b>Slide Rule: Trigonometric Applications</b><br>2+0+4, 10 hours, non-credit                   |                      | \$ 5.00            |
| Math. 011  | <b>Practical Trigonometry</b><br>2+0+4, 32 hours, non-credit                                   |                      | \$16.00            |

#### MODERN LANGUAGES

|         |                                                                                                                    |              |         |
|---------|--------------------------------------------------------------------------------------------------------------------|--------------|---------|
| M.L. 21 | <b>Beginning French</b>                                                                                            | 3+0+6, cr. 3 | \$24.00 |
| M.L. 22 | <b>Beginning French</b><br>Must be preceded by M.L. 21, or equivalent.<br>Continuation of M.L. 21.                 | 3+0+6, cr. 3 | \$24.00 |
| M.L. 41 | <b>First Course in Standard German</b>                                                                             | 3+0+6, cr. 3 | \$24.00 |
| M.L. 42 | <b>Second Course in Standard German</b><br>Must be preceded by M.L. 41, or equivalent.<br>Continuation of M.L. 41. | 3+0+6, cr. 3 | \$24.00 |
| M.L. 61 | <b>First Course in Spanish</b>                                                                                     | 3+0+6, cr. 3 | \$24.00 |
| M.L. 62 | <b>Second Course in Spanish</b><br>Must be preceded by M.L. 61, or equivalent.<br>Continuation of M.L. 61.         | 3+0+6, cr. 3 | \$24.00 |

#### Non-Credit Courses

|          |                                                                               |  |                    |
|----------|-------------------------------------------------------------------------------|--|--------------------|
| M.L. 066 | <b>Elementary Conversational Spanish</b><br>2+0+4, 16 or 32 hours, non-credit |  | \$ 8.00 or \$16.00 |
|----------|-------------------------------------------------------------------------------|--|--------------------|



*Physics is another important basic science in which laboratory work is stressed.*

## PHYSICS

|           |                                                                                                                                                                                                                                                                                                                                                                                      |              |         |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| Phys. 21  | <b>General Physics</b><br>Must be preceded by Math. 2.<br>Mechanics, properties of matter, heat, with illustrative laboratory experiments.                                                                                                                                                                                                                                           | 4+3+8, cr. 5 | \$50.00 |
| Phys. 22  | <b>General Physics</b><br>Must be preceded by Physics 21.<br>Electricity, sound, light, with illustrative laboratory experiments.                                                                                                                                                                                                                                                    | 4+3+8, cr. 5 | \$50.00 |
| Phys. 34  | <b>General Physics</b><br>Must be preceded by Math. 11 and 12, or by Math. 9.<br>Mechanics, heat, and sound, for students not specializing in physics.                                                                                                                                                                                                                               | 3+3+6, cr. 4 | \$41.00 |
| Phys. 35  | <b>General Physics</b><br>Must be preceded by Physics 34, or equivalent.<br>Electricity, light, and modern physics, for students not specializing in physics.                                                                                                                                                                                                                        | 3+3+6, cr. 4 | \$41.00 |
| Phys. 105 | <b>Acoustics</b><br>Must be preceded by Math. 4. and by two terms of general physics (Physics 21 and 22).<br>Introduction to acoustics of reproduction and communications systems; architectural acoustics; sound production and reception.                                                                                                                                          | 3+0+6, cr. 3 | \$24.00 |
| Phys. 106 | <b>Electricity and Magnetism</b><br>Must be preceded by Physics 10, or equivalent.<br>Introductory theoretical course. Vector analysis; electrostatic problems; theory of dielectrics; theory of conduction; thermoelectric and photoelectric phenomena; electromagnetic effects due to steady and changing currents; magnetic properties of matter; Maxwell's equations; radiation. | 3+0+6, cr. 3 | \$24.00 |

|           |                                                                                                                                                                                                                                                                                                                                   |                             |         |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------|
| Phys. 124 | <b>Introduction to Modern Physics</b>                                                                                                                                                                                                                                                                                             | 3+0+6, cr. 3                | \$24.00 |
|           | Must be preceded by Physics 21-22, or equivalent.<br>Historical survey of modern physics up to 1927. Kinetic theory; the electron; ions; isotopes; quantum theory of radiation; photons; Bohr theory of the atom; the spectrum of hydrogen; X-ray spectra; shell structure of the atom, and interpretation of the Periodic Table. |                             |         |
|           | <b>Non-Credit Courses</b>                                                                                                                                                                                                                                                                                                         |                             |         |
| Phys. 001 | <b>Principles of Mechanics</b>                                                                                                                                                                                                                                                                                                    | 3+0+6, 48 hours, non-credit | \$24.00 |
| Phys. 002 | <b>Principles of Heat</b>                                                                                                                                                                                                                                                                                                         | 3+0+6, 48 hours, non-credit | \$24.00 |
| Phys. 003 | <b>Principles of Electricity</b>                                                                                                                                                                                                                                                                                                  | 3+0+6, 48 hours, non-credit | \$24.00 |
| Phys. 004 | <b>Review of Physics for Engineers</b>                                                                                                                                                                                                                                                                                            |                             |         |
|           |                                                                                                                                                                                                                                                                                                                                   | 3+0+6, 48 hours, non-credit | \$24.00 |

## *Division of Education and Applied Psychology*

### EDUCATION

|            |                                                                                                                                                                                                                                 |                              |                    |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------|
| Educ. 15*  | <b>Special Methods of Teaching Trade<br/>and Industrial Subjects</b>                                                                                                                                                            | 3+0+6, cr. 3                 | \$24.00            |
|            | Must be preceded by Psy. 1, 2, and Educ. 3, 4.<br>Principles and procedures for teaching trade and industrial subjects.                                                                                                         |                              |                    |
| Educ. 31*  | <b>School Shop Management</b>                                                                                                                                                                                                   | 3+0+6, cr. 3                 | \$24.00            |
|            | The school shop and drawing room, including equipment and management.                                                                                                                                                           |                              |                    |
| Educ. 33*  | <b>Principles and Practices of Industrial<br/>Training Programs</b>                                                                                                                                                             | 3+0+6, cr. 3                 | \$24.00            |
| Educ. 35*  | <b>Occupational and Trade Analysis</b>                                                                                                                                                                                          | 3+0+6, cr. 3                 | \$24.00            |
|            | Elements of the trade or subjects which the student is preparing to teach.                                                                                                                                                      |                              |                    |
| Educ. 39*  | <b>Organization of Instruction Material<br/>for Trades and Industries</b>                                                                                                                                                       | 3+0+6, cr. 3                 | \$24.00            |
|            | Must be preceded by Psy. 1 and 2, and Educ. 3, 4, and 35.<br>Application of governing principles to establish an effective arrangement of teaching content required for occupational courses in vocational schools and classes. |                              |                    |
| Educ. 112  | <b>The Use of Community Resources<br/>in Guidance</b>                                                                                                                                                                           | 3+0+6, cr. 3                 | \$24.00            |
|            | Emphasizes the analysis and utilization of the available community resources that have a bearing upon the development and activities of young people.                                                                           |                              |                    |
| Educ. 118* | <b>Curriculum Development in Industrial Arts</b>                                                                                                                                                                                | 2+0+4, cr. 2 or 3+0+6, cr. 3 | \$16.00 or \$24.00 |
| Educ. 123  | <b>Introduction to the Technology of<br/>Tests and Measurements</b>                                                                                                                                                             | 3+0+6, cr. 3                 | \$24.00            |
|            | Must be preceded by Psy. 131.<br>Introductory course in the theory and practice of measurement, with illustrations from education, industry, and business; emphasis on the guidance functions of the measuring devices studied. |                              |                    |
| Educ. 135  | <b>Principles and Problems of Vocational<br/>and Educational Guidance</b>                                                                                                                                                       | 3+0+6, cr. 3                 | \$24.00            |
|            | Must be preceded by twelve hours of psychology and education or equivalent professional training.<br>The development of vocational and educational guidance in the home,                                                        |                              |                    |

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\* Offered as a field service course.

school, industry, and service organizations; consideration of the principles and an over-view of present practices in such guidance.

- Educ. 137\***      **Tests and Measurements in Industrial Education**      3+0+6, cr. 3      \$24.00  
 Must be preceded by Psy. 131 or equivalent.  
 Designed for industrial education students as an alternate course for Educ. 123. Concepts involved in testing and measuring, with applications in industry and industrial education.
- Educ. 138\***      **Educational and Industrial Co-ordination**      3+0+6, cr. 3      \$24.00  
 Must be preceded by Psy. 1, 2, and Educ. 3, 4, 15, and 35.  
 Common problems of education and industry, with emphasis on preparation for the work of the coordinator.
- Educ. 139\***      **Organization of Instruction Materials for Trades and Industries**      cr. 1 to 3      \$ 8.00 to \$24.00  
 Must be preceded by Psy. 1, 2, and Educ. 3, 4, 15, and 35, or by permission of instructor.  
 Application of governing principles to establish an effective arrangement of teaching content required for occupational courses in vocational schools and classes.
- Educ. 163\***      **Conference Leadership Training**      cr. 2 to 3      \$16.00 or \$24.00  
 Training by the conference method, making use of devices, techniques, and material necessary to the work of the conference leader.
- Educ. 164\***      **Problems of Part-Time and Evening Schools in Trade and Industrial Education**      3+0+6, cr. 3      \$24.00  
 Consideration of the problems faced by the teachers in conducting part-time and evening-school classes in trades and industries, with particular emphasis on content and methods to be used.
- Educ. 187**      **Foundations of Education**      3+0+6, cr. 3      \$24.00  
 Must be preceded by twelve hours in education.  
 A systematic examination of the aims and purposes of education from the point of view of the needs of society, the basic needs of the child, and educational philosophy.
- Educ. 199\***      **Research in Trades and Industries**      cr. 3      \$24.00
- Educ. 222**      **Secondary School Curriculum**      cr. 2 to 3      \$16.00 or \$24.00  
 The objectives, organization, and administration of the secondary-school curriculum.
- Educ. 227\***      **Organization and Administration of Vocational Education**      3+0+6, cr. 3      \$24.00  
 Must be preceded by twelve hours in education or by equivalent professional training.  
 Major phases of vocational education; purpose, laws, administrative machinery, federal, state, and local; sources and expenditures of funds; kinds of classes and purposes of each; vocational teacher-training; relation between vocational education and land-grant college extension work; emphasis on vocational education in Indiana.
- Educ. 229\***      **Seminar in Vocational Trade and Industrial Education**      3+0+6, cr. 3      \$24.00  
 Must be preceded by twelve hours in education or by equivalent professional training.  
 Current problems in vocational trade and industrial education.

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\* Offered as a field service course.

|                  |                                                                                       |            |                    |
|------------------|---------------------------------------------------------------------------------------|------------|--------------------|
| <b>Educ. 230</b> | <b>Seminar in Home Economics Education</b>                                            | cr. 2 to 6 | \$16.00 to \$48.00 |
|                  | Must be preceded by twelve hours in education or by equivalent professional training. |            |                    |
|                  | Current problems in home economics education. May be repeated for credit.             |            |                    |

## PSYCHOLOGY

|                 |                                                                                                                                                                                                                                                                                                                        |                                |                    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------|
| <b>Psy. 1*</b>  | <b>Elementary Psychology</b>                                                                                                                                                                                                                                                                                           | 2+0+4, cr. 2*, or 3+0+6, cr. 3 | \$16.00 or \$24.00 |
|                 | Freshmen will be admitted only with approval of instructor.                                                                                                                                                                                                                                                            |                                |                    |
|                 | Introduction to fundamental principles of psychology covering particularly the topics of personality, intelligence, emotion, attention, perception, learning, memory, and thinking.                                                                                                                                    |                                |                    |
| <b>Psy. 2</b>   | <b>Educational Psychology</b>                                                                                                                                                                                                                                                                                          | 3+0+6, cr. 3                   | \$24.00            |
|                 | Must be preceded by Psy. 1, or equivalent.                                                                                                                                                                                                                                                                             |                                |                    |
|                 | Introduction to the problems of the pupil; educational adjustment, with emphasis on the application of psychological principles to teaching.                                                                                                                                                                           |                                |                    |
| <b>Psy. 9</b>   | <b>Child Psychology</b>                                                                                                                                                                                                                                                                                                | 3+0+6, cr. 3                   | \$24.00            |
|                 | Must be preceded by Psy. 1, or equivalent.                                                                                                                                                                                                                                                                             |                                |                    |
|                 | Age-level characteristics and needs of children from birth to the teens in motor control, language, learning, play, etc.; children's motivations and emotional characteristics; interpersonal relations and other factors affecting children.                                                                          |                                |                    |
| <b>Psy. 103</b> | <b>Mental Hygiene in Education</b>                                                                                                                                                                                                                                                                                     | 3+0+6, cr. 3                   | \$24.00            |
|                 | Must be preceded by Psy. 1 and 2, or equivalent.                                                                                                                                                                                                                                                                       |                                |                    |
|                 | General principles of mental and emotional health and how to set up constructive conditions for the years of childhood and youth; the child in relation to parents, teachers, and other children.                                                                                                                      |                                |                    |
| <b>Psy. 109</b> | <b>Problems in Child Psychology</b>                                                                                                                                                                                                                                                                                    | 3+0+6, cr. 3                   | \$24.00            |
|                 | Must be preceded by six semester hours of psychology.                                                                                                                                                                                                                                                                  |                                |                    |
|                 | Development of the child from birth to adolescence, with special study of such topics as play, sex differences, characteristics of learning at different age levels, and relative parts played by heredity and environment in the child's growth. Problems of special interest to members of class will be considered. |                                |                    |
| <b>Psy. 131</b> | <b>Statistical Methods Applied to Psychology, Education and Sociology</b>                                                                                                                                                                                                                                              | 3+0+6, cr. 3                   | \$24.00            |
|                 | Must be preceded by six hours of education or psychology. Required of all candidates for degree of Master of Science in Psychology.                                                                                                                                                                                    |                                |                    |
|                 | Application of elementary statistical concepts, such as central tendency, variability, correlation, validity, and reliability, to problems of psychology and mental measurements.                                                                                                                                      |                                |                    |
| <b>Psy. 141</b> | <b>Abnormal Psychology</b>                                                                                                                                                                                                                                                                                             | 3+0+6, cr. 3                   | \$24.00            |
|                 | Must be preceded by twelve semester hours of psychology.                                                                                                                                                                                                                                                               |                                |                    |
|                 | Various forms of mental disorder from standpoint of their origin, treatment, prevention, and social significance; mental deficiency and special disabilities. Particular attention to relation between aberrations and problems of normal human adjustment.                                                            |                                |                    |
| <b>Psy. 173</b> | <b>Personnel Psychology</b>                                                                                                                                                                                                                                                                                            | 3+0+6, cr. 3                   | \$24.00            |
|                 | Introduction to psychology through the topics of individual differences, aptitude testing, merit ratings, industrial safety, motivation, morale, and training.                                                                                                                                                         |                                |                    |

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\* Requires special campus approval for two-credit course.

|          |                                                                                                                                                                                                                                                                                   |              |         |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| Psy. 174 | <b>General Social Psychology</b>                                                                                                                                                                                                                                                  | 3+0+6, cr. 3 | \$24.00 |
|          | Must be preceded by six hours of psychology or three hours of psychology and three hours of sociology.<br>Conditions and consequences of human behavior in social situations, with emphasis upon the mechanism and the processes on the basis of which socialization takes place. |              |         |

#### Non-Credit Courses

|         |                                       |                             |         |
|---------|---------------------------------------|-----------------------------|---------|
| Psy. 01 | <b>General Psychology</b>             | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| Psy. 03 | <b>Personal Relations in Industry</b> | 2+0+4, 16 hours, non-credit | \$ 8.00 |
| Psy. 09 | <b>Psychology of Child Training</b>   | 2+0+4, 16 hours, non-credit | \$ 8.00 |

#### SOCIOLOGY

|          |                                                                                                                                                                               |              |         |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| Soc. 1   | <b>Introductory Sociology</b>                                                                                                                                                 | 3+0+6, cr. 3 | \$24.00 |
|          | Presents an over-view of the science and principles of human relationship, social organization, social societies, and social control.                                         |              |         |
| Soc. 11  | <b>Social Problems</b>                                                                                                                                                        | 3+0+6, cr. 3 | \$24.00 |
|          | Major social problems of the day—social conflict, family breakdown, the physically and mentally handicapped, poverty, crime, etc.; modern trends in prevention and treatment. |              |         |
| Soc. 141 | <b>Agricultural Sociology</b>                                                                                                                                                 | 3+0+6, cr. 3 | \$24.00 |
|          | The structure and functions of rural society; rural people, groups, institutions, and organizations; current social problems in rural society.                                |              |         |
| Soc. 151 | <b>The Sociology of Cities</b>                                                                                                                                                | 3+0+6, cr. 3 | \$24.00 |
|          | Nature and ecology of urban societies; types of social behavior in cities; metropolitan regions and city planning with emphasis upon usefulness of cities.                    |              |         |
| Soc. 171 | <b>Marriage and Family Relations</b>                                                                                                                                          | 3+0+6, cr. 3 | \$24.00 |
|          | Social, psychological, and economic problems of the family.                                                                                                                   |              |         |
| Soc. 182 | <b>Social Bases of Education</b>                                                                                                                                              | 3+0+6, cr. 3 | \$24.00 |
|          | Must be preceded by Psych. 1 and Soc. 1.<br>Sociological interpretation and evaluation of school and non-school education.                                                    |              |         |

#### Non-Credit Course

|          |                                                             |                      |         |
|----------|-------------------------------------------------------------|----------------------|---------|
| Soc. 071 | <b>Marriage and Family Relations</b>                        | 16 hours, non-credit | \$ 8.00 |
|          | Social, psychological, and economic problems of the family. |                      |         |

### *Division of Physical Education for Men*

|             |                                                                                                                                                                                                                |                                |                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------|
| P.E.M. 12   | <b>Physical Activities</b>                                                                                                                                                                                     | 0+3+0, cr. 1                   | \$15.00            |
|             | Activities designed to improve organic vigor and neuro-muscular skills.                                                                                                                                        |                                |                    |
| P.E.M. 167* | <b>Organization of Choral and Orchestral Recreation</b>                                                                                                                                                        | 2+0+4, cr. 2*, or 2+3+4, cr. 3 | \$20.00 or \$33.00 |
|             | Organization, direction, and maintenance of choral and instrumental recreation with special emphasis on the non-technical approach to make music attractive as an activity for industrial employees.           |                                |                    |
| P.E.M. 265  | <b>Principles and Practices in Industrial Recreation</b>                                                                                                                                                       | 3+0+6, cr. 3                   | \$24.00            |
|             | Must be preceded by P.E.M. 34b (Introduction to Industrial Recreation) and P.E.M. 95 (Field Experience in Industrial or Community Recreation), or permission of the instructor.<br>For graduate students only. |                                |                    |

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\* Requires special campus approval for two-credit course.

### Non-Credit Courses

|           |                         |                             |         |
|-----------|-------------------------|-----------------------------|---------|
| P.E.M. 06 | Swimming                | 0+1+0, 16 hours, non-credit | \$ 6.00 |
| P.E.M. 07 | Swimming, Advanced      | 0+1+0, 16 hours, non-credit | \$ 6.00 |
| P.E.M. 08 | Recreational Activities | 0+1+0, 16 hours, non-credit | \$ 6.00 |

## *Physical Education for Women*

|           |                                                                                                                                                              |              |         |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|
| P.E.W. 53 | Physical Education<br>Improvement of personal technique in motor skills that have high leisure-time value and contribute to maintenance of physical fitness. | 0+2+1, cr. 1 | \$10.00 |
| P.E.W. 54 | Physical Education<br>Continuation of P.E.W. 53.                                                                                                             | 0+2+1, cr. 1 | \$10.00 |

## University Staff

### *Technical Extension Division*

#### Subject-Matter Supervisors

|                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| ARNOLD A. ALBERTS, B.S., M.S., Ph.D. | Department of Chemistry                          |
| HOMER R. ALLEN, B.P.E., M.Ed.        | Division of Physical Education for Men           |
| HAROLD T. AMRINE, B.S.M.E., M.S.M.E. | Department of General Engineering                |
| J. NORMAN ARNOLD, E.E., M.S.E.E.     | Department of General Engineering                |
| ESTON J. ASHER, B.D., M.A.           | Division of Education and Applied Psychology     |
| FRANK R. HALL, A.B., M.A.            | Department of History, Economics, and Government |
| E. GLENN GRIFFIN, B.A., M.A.         | Department of English                            |
| M. WILES KELLER, A.B., A.M., Ph.D.   | Department of Mathematics                        |
| RALPH W. LEFLER, A.B., A.M.          | Department of Physics                            |
| ISIDOR WALERSTEIN, B.A., Ph.D.       | Department of Physics                            |
| LELAND S. WINCH, B.A., M.A.          | Department of Speech                             |

#### Full-Time Teaching Staff

|                          |                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|
| MAURICE D. ADAMS (1946)  | Assistant Professor of Physics (Indianapolis)<br>B.S., Indiana State Teachers, 1926; M.Ed., Pittsburgh, 1933    |
| WILLIAM R. BECK (1948)   | Instructor in Mathematics (Ft. Wayne)<br>B.A., Brooklyn College, 1947; M.A., New York University, 1948          |
| HAROLD A. BEDIANT (1947) | Assistant Professor of Chemistry (Hammond)<br>A.B., Albion, 1916; Ph.D., Cornell, 1926                          |
| GILBERT B. BLISS (1947)  | Instructor in Electrical Engineering (Ft. Wayne)<br>B.S., Illinois, 1933; M.S., 1940, Ph.D., <i>ibid</i> , 1949 |

- J. HAL CARTER (1947) Associate Professor of Chemistry (Ft. Wayne)  
A.B., Union University, 1925; M.S., Vanderbilt, 1927; Ph.D., Iowa State College, 1931
- ALLEN G. CLEAVER (1948) Instructor in General Engineering (Ft. Wayne)  
B.S., Indiana State Teachers, 1927
- LEONARD COHEN (1948) Instructor in Psychology (Indianapolis)  
B.A., Clark University, 1943; M.L., University of Pittsburgh, 1945;  
D.S.S., New School for Social Research, 1947
- LEON W. CONE, JR. (1948) Instructor in History, Economics and Government  
B.S., University of Massachusetts, 1938; M.A., University of Illinois, 1946 (Hammond)
- WILBUR W. CHAMBERS (1946) Instructor in Mathematics (Indianapolis)  
A.B., Colorado State College of Education, 1925; M.A., *ibid*, 1926
- NOLAND T. COOPER (1946) Instructor in Mathematics (Ft. Wayne)  
B.S., Ed., Central Missouri State Teachers, 1936; M.A., Missouri, 1939
- CARL C. CRAMER (1946) Instructor in General Engineering (Indianapolis)  
B.S., Stout, 1925; M.S., Colorado Agricultural, 1932
- HELEN L. CRISWELL (1948) Instructor in English (Ft. Wayne)  
A.B., Hiram College, 1924
- EVA E. DRAEGERT (1947) Instructor in History and Government (Indianapolis)  
B.Ed., Western Illinois State Teachers College, 1927; M.A., State University of Iowa, 1936
- EDWIN H. ERNST (1946) Instructor in English (Indianapolis)  
B.A., Notre Dame, 1931; M.A., 1936
- GOLDEN A. FLAKE (1947) Instructor in Physics (Indianapolis)  
B.Ed., Eastern Illinois State Teachers, 1933; M.A., Northwestern, 1942
- RAYMOND G. GOODIN (1946) Instructor in Chemistry (Indianapolis)  
B.S., Purdue, 1940
- ELSIE GULYAS (1948) Instructor in Chemistry (Hammond)  
S.B., University of Chicago, 1935; M.S., Purdue University, 1948
- WALTER J. HANSEN (1946) Assistant Professor of History and Government  
A.B., Michigan, 1931; A.M., 1932; Ph.D., 1941 (LaPorte)
- OSKAR R. HAUENSTEIN (1947) Instructor in Engineering Drawing (Hammond)  
Military Engineer, K.u.k. Pioneer Kadettenschule, Hainburg, Austria, 1901;  
Civil Engineer, K.u.k. Hoehrer Geniekurs, Wien, Austria, 1903
- WILLIAM A. HOUK (1946) Instructor in Physics (Ft. Wayne)  
B.S., Ball State Teachers, 1938, M.S., Purdue University, 1948
- FREDERIC M. ISENSEE (1946) Instructor in Engineering Drawing (Hammond)  
B.S., Arch., Armour, 1914
- LOREN T. JONES (1947) Assistant Professor of Chemistry (Indianapolis)  
B.S., Iowa, 1931; M.S., Michigan, 1933; Ph.D., 1934
- MARTIN L. KRAUSS (1946) Instructor in History and Government (Indianapolis)  
B.S., Michigan State, 1936; M.A., 1937
- ROBERT M. KUNSE (1946) Instructor in Engineering Drawing (Indianapolis)  
B.S.E.E., Purdue, 1911; M.A., Indiana, 1930
- ROBERT R. LAFOLLETTE (1948) Instructor in Chemistry (Ft. Wayne)  
B.S., Indiana State Teachers College, 1948
- A. P. McDONALD (1948) Assistant Professor of Engineering Drawing  
B.S.E.E., Texas A. and M., 1930; M.S., *ibid*, 1943 (Indianapolis)

- MARY L. MENDIONES (1946) Assistant Professor of English (Indianapolis)  
A.B., Knox, 1936; M.A., Illinois, 1938, Ph.D., 1943
- JOSEPH HENRY MEYERS (1946) Instructor in English (Indianapolis)  
A.B., Xavier (Ohio), 1925; M.A., Princeton, 1926
- VERA T. MORRIS (1946) Instructor in Mathematics (Indianapolis)  
A.B., DePauw, 1912
- HOWARD D. MURDOCK (1946) Instructor in Chemistry (LaPorte)  
B.S., Notre Dame, 1937; M.S., 1940
- RICHARD S. NEWCOMBER (1948) Instructor in History and Government  
M.A., Duke University, 1936 (Ft. Wayne)
- JOSHUA HARLEY NICHOLS (1946) Instructor in History and Government  
A.B., Indiana, 1922, M.A., 1925; Ph.D., *ibid*, 1937 (Hammond)
- EDWARD F. NUGENT (1946) Instructor in English (Indianapolis)  
A.B., Holy Cross, 1939; A.M., Clark, 1940
- REBECCA E. PITTS, (1948) Instructor in English (Indianapolis)  
B.A., Butler University, 1926; M.A., University of Chicago, 1930
- RALPH V. PRITCHARD (1946) Instructor in Mathematics (Hammond)  
B.S., Central Normal, 1913; A.B., Butler, 1923
- RAYMOND R. RIEN (1948) Instructor in Biology (Ft. Wayne)  
B.A., King's College, London University, 1913; B.S., King's College, 1921;  
M.S., Glasgow University, 1925; Ph.D., London University, 1928; D.Sc., University of  
Utrecht, 1944
- WILLIAM R. ROARK (1946) Instructor in Chemistry (Indianapolis)  
A.B., William Jewell, 1930
- MARGARET M. SCULLY (1946) Instructor in Mathematics (LaPorte)  
A.B., New Rochelle, 1924; Ed.M., Boston University, 1946
- LLOYD W. SMITH (1948) Instructor in Civil Engineering (Indianapolis)  
B.S.C.E., Purdue University, 1940
- LESLIE M. SPARKS (1946) Instructor in History and Government (Indianapolis)  
B.S.L., Butler, 1936; M.S., 1946
- SIGRID STARK (1946) Instructor in English (Hammond)  
B.Ed., Wisconsin State Teachers (Stevens Point), 1933; M.A., Northwestern, 1938
- WILFRED A. STOCK (1946) Instructor in Mathematics (Hammond)  
B.S., Lewis Institute, 1935; M.A., Northwestern, 1938
- ANNA K. SUTER (1947) Instructor in Mathematics (Indianapolis)  
A.B., Butler, 1927; A.M., Indiana, 1936
- THEODORE A. THELANDER, JR. (1947) Assistant Professor of History and  
B.A., Wisconsin, 1936; Ph.D., 1940 Government (Indianapolis)
- BILL TWITCHELL (1948) Instructor in Physical Education (Ft. Wayne)  
B.S., Utah State Agricultural College, 1943
- BRUCE M. TURNEY (1947) Instructor in Chemistry (Indianapolis)  
B.S., Western Illinois State, 1947; M.S., *ibid*
- LOUIS R. WARD (1946) Instructor in English (LaPorte)  
B.A., Colorado, 1939; M.A., 1940

# PURDUE UNIVERSITY

## *Division of Technical Extension*

### Administrative Officers and Members of Technical Extension Council

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WILLIAM L. AYRES, Dean, School of Science, Council Member

RICHARD M. BATEMAN, Manager, Technical Extension Division, Fort Wayne

CHARLES W. BEESE, Director, Technical Extension Division, Council Chairman

ARTHUR K. BRANHAM, Supervisor, Formal Instruction, Technical Extension  
Division

ALTON W. COLLINS, Manager, Technical Extension Division, Indianapolis

CLARENCE E. DAMMON, Registrar and Director of Admissions, Council Member

VON ROY DAUGHERTY, Assistant Director—Operations, Technical Extension  
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B. L. DODDS, Director, Division of Education and Applied Psychology, Council  
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MAURICE R. GRANEY, Head, Technical Institutes

MILLARD E. GYTE, Manager, Technical Extension Division, Hammond

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LEROY E. HOFFMAN, Associate Director, Agricultural Extension Department,  
Council Member

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